

Performance Evaluation of Selected Indian Public Sector Banks: An Extended Balanced Scorecard Approach

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Abstract

This study used the Balanced Scorecard (BSC) concept developed by Kaplan and Norton (1992). The empirical study evaluated the performance of three selected public sector banks in India, namely Canara Bank (CB), Union Bank of India (UBI), and UCO Bank, using an extended Balanced Scorecard framework comprising Financial, Customer, Internal Business Process, Learning and Growth, and Environmental, Social and Governance (ESG) perspectives. Further, profitability of these banks during the period from 2016–2025 was measured in terms of Return on Assets (RoA) and Return on Equity (RoE). In addition, this paper examined the relationship between profitability and variables of the BSC framework using correlation and multiple regression analysis. The results revealed variations in the performance of the selected banks across the different perspectives of the BSC framework. Correlation analysis disclosed statistically significant relationships of GP, GII, TANB and GNMT with RoA, while CIR, GII, TANB, ITAR, GNMT and RPSATA exhibited significant relationships with RoE. The results of multiple regression analysis revealed that GP and TANB had a significant positive influence on RoA, whereas GNMT exhibited a negative influence. The model explained 65.1 per cent of the variation in RoA. For RoE, the selected BSC variables jointly explained 63.7 per cent of the variation, although none of the individual variables emerged as statistically significant predictors at the 5 per cent level. The findings indicate that profitability of public sector banks is influenced not only by financial measures but also by customer, internal business process, learning and growth, and ESG dimensions. Therefore, the adoption of an extended BSC framework provides a comprehensive approach for evaluating bank performance and identifying the key drivers of profitability.

Keywords: Balanced Scorecard, Public Sector Banks, Bank Performance, Profitability, RoA, RoE, ESG

1. Introduction

The Indian banking sector has undergone substantial transformation during the last decade due to technological advancements, regulatory reforms, digital banking initiatives, and changing customer expectations. Public Sector Banks (PSBs) continue to play a vital role in the Indian financial system by promoting credit expansion, financial inclusion, and economic development.

Traditionally, bank performance has been evaluated using financial indicators such as profitability, liquidity, and solvency. However, exclusive dependence on financial measures does not adequately capture critical dimensions such as customer satisfaction, operational efficiency, innovation, employee development, and sustainability. To overcome these limitations, Kaplan and Norton (1992, 1996) introduced the Balanced Scorecard (BSC), a strategic performance measurement framework that integrates both financial and non-financial indicators.

The BSC facilitates a comprehensive assessment of organizational performance by examining financial outcomes alongside customer relationships, internal processes, and learning and growth capabilities (Kaplan & Norton, 1996). In the banking sector, this multidimensional approach enables a more holistic evaluation of performance than conventional financial measures alone.

In recent years, Environmental, Social, and Governance (ESG) considerations have emerged as important determinants of long-term organizational sustainability and stakeholder value creation. Consequently, the present study extends the traditional BSC framework by incorporating ESG indicators to evaluate the performance of selected Indian PSBs.

The study focuses on Canara Bank, Union Bank of India, and UCO Bank during the period 2016–2025 and assesses their performance through five perspectives of the extended BSC framework.

Perspectives of the Extended Balanced Scorecard Framework

1. Financial Perspective: The Financial Perspective evaluates an organization's ability to generate profits, maintain financial stability, and create value for stakeholders. It focuses on indicators related to profitability, efficiency, and overall financial performance, reflecting the outcomes of strategic and operational decisions (Kaplan & Norton, 1996).

2. Customer Perspective: The Customer Perspective examines how effectively an organization satisfies customer needs and expectations. In the banking sector, customer satisfaction, service quality, customer retention, and market reach are critical determinants of long-term success and competitive advantage (Kaplan & Norton, 1996).

3. Internal Business Process Perspective: The Internal Business Process Perspective focuses on the efficiency and effectiveness of internal operations that support value creation and financial performance. For banks, efficient management of advances, investments, non-performing assets, risk management, and operational processes significantly influences performance outcomes.

4. Learning and Growth Perspective: The Learning and Growth Perspective emphasizes organizational capabilities related to human resources, technology, innovation, and continuous improvement. Investments in employee development, technological infrastructure, and knowledge systems contribute to enhanced service quality and operational efficiency in banks (Kaplan & Norton, 2001).

5. Environmental, Social and Governance (ESG) Perspective: The ESG Perspective extends the traditional BSC framework by incorporating sustainability and responsible business practices. Environmental factors assess sustainable resource utilization, social factors evaluate stakeholder welfare and financial inclusion, while governance factors focus on transparency, accountability, and ethical management. The integration of ESG indicators provides a more comprehensive evaluation of organizational performance and long-term sustainability.

2. Review of Literature

Kaplan and Norton (1992) introduced the Balanced Scorecard as a comprehensive performance measurement framework that combines financial and non-financial indicators. The framework includes four perspectives: Financial, Customer, Internal Business Processes, and Learning and Growth. The study argued that traditional financial measures alone are insufficient for evaluating organizational performance and emphasized a balanced approach for long-term success. Kaplan and Norton (1996) expanded the Balanced Scorecard concept by presenting it as a strategic management system. The study highlighted the cause-and-effect relationships among the four perspectives and demonstrated how organizations can translate strategy into measurable objectives. The authors concluded that improvements in learning and growth ultimately lead to enhanced financial performance.

Ashton (1998) examined the implementation of the Balanced Scorecard in NatWest Bank and found significant improvements in performance management and strategic alignment. The study showed that the framework enabled managers to monitor both financial and non-financial measures effectively. It demonstrated the practical usefulness of the Balanced Scorecard in the banking sector.

Banker, Chang, and Pizzini (2004) investigated the effectiveness of Balanced Scorecard measures in managerial decision-making. The study found that performance measures aligned with organizational strategy improve evaluation accuracy and strategic execution. The authors concluded that combining financial and non-financial indicators provides a more comprehensive assessment of performance.

Chiang and Lin (2009) integrated the Balanced Scorecard with Data Envelopment Analysis (DEA) to evaluate organizational performance. The study demonstrated that combining financial and non-financial indicators enhances benchmarking and comparative analysis. The findings suggested that multidimensional evaluation frameworks improve performance measurement accuracy.

Wu, Lin, and Tsai (2009) developed a Fuzzy Multi-Criteria Decision Making model based on the Balanced Scorecard to evaluate banking performance. The study identified twenty-three indicators across the four BSC perspectives and applied advanced ranking techniques. The findings confirmed that the Balanced Scorecard offers a comprehensive approach to assessing bank performance.

Ozturk and Coskun (2014) reviewed the application of the Balanced Scorecard in the banking industry. The study highlighted its role in aligning operational activities with strategic objectives while balancing financial and non-financial measures. The authors concluded that the framework enhances organizational effectiveness and competitiveness.

Annapurna and Manchala (2017) evaluated the performance of SBI, Bank of Baroda, and Punjab National Bank using the Balanced Scorecard framework during 2006–2015. The study analyzed financial, customer, internal business process, and learning and growth perspectives in relation to profitability measures. The findings revealed significant performance differences among the selected public sector banks.

Dasgupta and Gupta (2018) examined the causal relationships among the four Balanced Scorecard perspectives in Indian retail banks. Using Structural Equation Modeling, the study found that learning and growth positively influence internal processes, customer satisfaction, and financial outcomes. The findings supported the strategic linkages proposed by Kaplan and Norton.

Raut and Sahasrabuddhe (2021) conducted a comparative analysis of Indian public and private sector banks using the Balanced Scorecard framework. The study found that private sector banks performed better in customer and operational dimensions, while public sector banks excelled in financial inclusion and outreach. The research reinforced the Balanced Scorecard as an effective tool for holistic banking performance evaluation.

Existing studies have widely applied the Balanced Scorecard framework to assess organizational and banking performance. However, most research focuses on the traditional four-dimensional model and uses a limited set of indicators. Studies incorporating an ESG perspective into the Balanced Scorecard framework for evaluating Indian public sector banks remain limited, creating a scope for further research in this area.

3. Objectives of the Study

1. To evaluate the performance of selected Indian Public Sector Banks using an integrated Balanced Scorecard framework comprising Financial, Customer, Internal Business Process, Learning and Growth, and ESG perspectives.
2. To analyze and compare the effectiveness of the selected banks across various performance dimensions by examining key financial and non-financial indicators during the study period (2015–2025).
3. To assess the contribution of ESG-related practices, including corporate governance, social responsibility, and financial inclusion initiatives, towards the overall performance of the selected banks.
4. To identify the relative strengths and weaknesses of Canara Bank, Union Bank of India, and UCO Bank and rank their overall performance based on the Balanced Scorecard evaluation framework.

4. Research Methodology

The present study evaluates the performance of selected Indian Public Sector Banks (PSBs), namely Canara Bank, Union Bank of India, and UCO Bank, using the Balanced Scorecard (BSC) framework developed by Kaplan and

Norton (1992). Since these banks operate under a similar regulatory and economic environment, a common set of performance indicators has been adopted across the five BSC perspectives to facilitate meaningful comparison.

The study is based on secondary data collected from annual reports, sustainability reports, corporate governance reports, official bank websites, Reserve Bank of India (RBI) publications, and other relevant banking sources. The analysis covers the period from 2015–16 to 2024–25. A total of fifteen indicators classified under the five BSC perspectives, along with RoA and RoE as profitability measures, are used to assess the performance of the selected banks.

Table 1: Balanced Scorecard Framework for Public Sector Banks

BSC Perspective	Measure	Formula
Financial Perspective	Growth in Profits(GP)	$((\text{Current Year Profit} - \text{Previous Year Profit}) / \text{Previous Year Profit}) \times 100$
	Cost to Income Ratio(CIR)	$(\text{Operating Expenses} / \text{Operating Income}) \times 100$
	Debt to Equity Ratio(DER)	Total Debt /Shareholders' Equity
Customer Perspective	Growth in Interest Income(GII)	$((\text{Current Year Interest Income} - \text{Previous Year Interest Income}) / \text{Previous Year Interest Income}) \times 100$
	CASA Ratio(CR)	$((\text{Current Account Deposits} + \text{Savings Account Deposits}) / \text{Total Deposits}) \times 100$
	Growth in Branches(GB)	$((\text{Current Year Branches} - \text{Previous Year Branches}) / \text{Previous Year Branches}) \times 100$
Internal Business Process Perspective	Total Advances to Number of Branches(TANB)	Total Advances/Number of Branches
	Investment to Total Assets Ratio(ITAR)	$(\text{Total Investments} / \text{Total Assets}) / 100$
	Growth in Non-Performing Assets (GNPAs)	$((\text{Current Year NPA} - \text{Previous Year NPA}) / \text{Previous Year NPA}) \times 100$
Learning and Growth Perspective	Growth in Number of Mobile Transactions(GNMT)	$((\text{Current Year Mobile Transactions} - \text{Previous Year Mobile Transactions}) / \text{Previous Year Mobile Transactions}) \times 100$
	Growth in Number of Net NEFT Transactions(GNNT)	$((\text{Current Year NEFT Transactions} - \text{Previous Year NEFT Transactions}) / \text{Previous Year NEFT Transactions}) \times 100$
	Growth in Capital Expenditure(GCE)	$((\text{Current Year Capital Expenditure} - \text{Previous Year Capital Expenditure}) / \text{Previous Year Capital Expenditure}) \times 100$
Environmental, Social, and Governance	Percentage of CSR Expenditure to Net Profits(PCENP)	$(\text{CSR Expenditure} / \text{Net Profit}) \times 100$

(ESG) Perspective	Growth in Number of Beneficiaries of PMJDY Accounts(GNBPA)	((Current Year PMJDY Beneficiaries – Previous Year PMJDY Beneficiaries)/ Previous Year PMJDY Beneficiaries) × 100
	Ratio Of Priority Sector Advances To Total Advances(RPSATA)	(Priority Sector Advances/Total Advances)*100

Source: Developed by the author based on BSC devised by Kaplan & Norton(1992)

Descriptive statistics such as mean and standard deviation are employed to evaluate the average performance and consistency of the banks, while ANOVA is used to identify significant differences among them across the selected indicators. Pearson’s correlation analysis is applied to examine the relationship between the fifteen BSC variables and profitability measures (RoA and RoE), and the significance of the correlations is tested using the t-test. Further, multiple regression analysis is conducted to determine the influence of the selected BSC variables on profitability. The significance of regression coefficients is assessed through the t-test, while the overall model fit is evaluated using the F-statistic and coefficient of determination (R²). Microsoft Excel and SPSS are used for data compilation and analysis. The BSC framework adopted for the study is presented in Table 1.

1.Financial Perspective:

Table 2: Performance of Select PSBs with respect to Financial Perspective of the BSC Framework

Year	GP			CIR			DER		
	CB	UBI	UCO	CB	UBI	UCO	CB	UBI	UCO
2016	-186.39	-23.84	-345.86	51.27	52.86	44.18	86.02	133.02	75.06
2017	-155.56	-57.36	-33.77	48.94	46.52	50.76	116.48	171.07	75.55
2018	-374.39	-1009.50	139.75	50.12	47.35	68.67	107.54	181.00	83.89
2019	-117.87	-43.84	-2.49	49.79	48.89	52.71	111.30	161.36	48.38
2020	-375.91	6.91	-43.50	55.39	45.11	39.37	104.74	155.19	84.06
2021	-253.83	-191.63	-106.75	49.24	46.63	41.18	82.50	80.30	70.39
2022	108.35	84.00	456.99	46.25	45.83	49.98	68.83	72.42	60.25
2023	84.33	61.77	100.32	44.88	46.37	56.03	76.42	54.33	82.28
2024	35.85	62.19	-11.07	47.13	46.51	59.83	64.59	27.74	95.65
2025	76.18	69.32	182.08	46.09	46.24	55.28	69.95	51.50	79.39
Mean	-115.92	-104.20	33.57	48.91	47.23	51.80	88.84	108.79	75.49
Std.dev	185.68	328.74	209.36	3.06	2.21	8.88	19.49	57.30	13.35

Source: Annual Reports of the banks during 2016-2025

Table 3: Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig
GP	Between Groups	138216.85	2	69108.42	1.11	0.34
	Within Groups	1677391.93	27	62125.63		
	Total	1815608.78	29			
CIR	Between Groups	106.79	2	53.39	1.72	0.20
	Within Groups	838.05	27	31.04		
	Total	944.84	29			
DER	Between Groups	5618.16	2	2809.08	2.19	0.13
	Within Groups	34572.65	27	1280.47		
	Total	40190.80	29			

Tables 2 and 3 present the financial performance of Canara Bank, Union Bank of India, and UCO Bank during 2016–2025. UCO Bank recorded the highest average GP and the lowest average DER, while Union Bank of India reported the lowest average CIR, indicating better operational efficiency. Although differences are observed in the mean values of GP, CIR, and DER across the banks, the ANOVA results reveal that these differences are not statistically significant, as the p-values exceed 0.05. Hence, the null hypothesis is accepted, indicating no significant difference in the financial performance of the selected banks during the study period.

2. Customer Perspective:

Table 4: Performance of Select PSBs with respect to Customer Perspective of the BSC Framework

Year	GII			CR			GB		
	CB	UBI	UCO	CB	UBI	UCO	CB	UBI	UCO
2016	30.47	0.46	-4.02	25.84	32.45	29.51	0.129	0.129	0.119
2017	-5.88	1.53	-11.94	30.33	34.53	31.50	0.140	0.120	0.109
2018	-0.23	0.37	-14.02	31.92	34.18	35.58	0.120	0.104	0.101
2019	13.57	4.13	2.31	29.28	36.19	43.55	0.118	0.098	0.094
2020	4.64	9.39	5.71	31.47	35.68	39.51	0.102	0.098	0.100
2021	41.59	8.57	-4.45	32.83	36.42	39.25	0.146	0.174	0.100
2022	0.35	-1.10	3.80	34.04	36.63	39.52	0.035	0.044	0.095
2023	21.73	18.94	17.92	31.18	35.35	36.88	0.097	0.076	0.143
2024	28.84	23.67	23.92	30.00	33.67	37.55	0.089	0.087	0.107
2025	16.97	13.84	15.21	31.74	35.22	37.98	0.074	0.069	0.115

Mean	15.21	7.98	3.44	30.86	35.03	37.08	0.105	0.100	0.108
Std.dev	15.56	8.54	12.62	2.24	1.33	4.09	0.034	0.036	0.015

Source: Annual Reports of the banks during 2016-2025

Table 5: Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig
GII	Between Groups	703.68	2	351.84	2.23	0.13
	Within Groups	4268.79	27	158.10		
	Total	4972.47	29			
CR	Between Groups	200.93	2	100.47	12.85	0.00
	Within Groups	211.16	27	7.82		
	Total	412.09	29			
GB	Between Groups	0.00	2	0.00	0.21	0.81
	Within Groups	0.02	27	0.00		
	Total	0.02	29			

Tables 4 and 5 present the customer perspective performance of Canara Bank, Union Bank of India, and UCO Bank during 2016–2025. Canara Bank recorded the highest average GII, while UCO Bank reported the highest average CR and GB. The ANOVA results show a significant difference among the banks only for CR ($p = 0.00$), leading to the rejection of the null hypothesis. However, no significant differences were found for GII ($p = 0.13$) and GB ($p = 0.81$), as their p -values exceed 0.05. Thus, the selected banks performed similarly in GII and GB but differed significantly in CR during the study period.

3. Internal Business Process Perspective:

Table 6: Performance of Select PSBs with respect to Internal Business Process Perspective of the BSC Framework

Year	TANB			ITAR			GNPAs		
	CB	UBI	UCO	CB	UBI	UCO	CB	UBI	UCO
2016	55.62	60.97	41.02	0.352	0.331	0.443	-52.28	102.82	80.87
2017	56.32	62.54	38.67	0.352	0.296	0.420	4.02	34.37	-6.37
2018	61.63	66.70	34.68	0.328	0.328	0.428	31.94	29.27	31.67
2019	67.83	67.38	32.26	0.315	0.348	0.457	-19.48	-16.32	-23.89
2020	68.38	69.41	32.86	0.338	0.327	0.486	-20.39	-14.80	-48.41
2021	61.45	63.54	36.15	0.322	0.406	0.470	34.02	57.76	-20.25
2022	72.38	75.28	40.04	0.324	0.392	0.462	-23.52	-10.81	-24.36
2023	85.68	88.89	48.70	0.331	0.363	0.416	-23.04	-46.71	-39.04

2024	97.10	102.96	56.45	0.333	0.341	0.387	-17.50	-30.36	-19.54
2025	85.06	89.04	48.40	0.329	0.365	0.422	-21.35	-29.29	-27.65
Mean	71.15	74.67	40.92	0.332	0.350	0.439	-10.76	7.59	-9.70
Std.dev	13.92	14.19	7.93	0.012	0.033	0.030	26.69	47.06	38.34

Source: Annual Reports of the banks during 2016-2025

Table 7: Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig
TANB	Between Groups	6882.44	2	3441.22	22.54	0.00000174
	Within Groups	4121.74	27	152.66		
	Total	11004.18	29			
ITAR	Between Groups	0.07	2	0.03	46.37	0.00000000184
	Within Groups	0.02	27	0.00		
	Total	0.08	29			
GNPAs	Between Groups	2122.93	2	1061.46	0.72	0.49
	Within Groups	39575.04	27	1465.74		
	Total	41697.97	29			

Tables 6 and 7 present the Internal Business Process Perspective performance of Canara Bank, UBI, and UCO Bank during 2016–2025. UBI recorded the highest average TANB, while UCO Bank reported the highest average ITAR. Where in UBI showed positive, Canara & UCO Bank showed negative average growth with GNPAs. The ANOVA results indicate significant differences among the banks for TANB ($p = 0.00000174$) and ITAR ($p = 0.00000000184$), leading to the rejection of the null hypothesis. However, no significant difference was observed for GNPAs ($p = 0.49$), as the p-value exceeds 0.05. Thus, the selected banks differed significantly in TANB and ITAR but exhibited similar performance in GNPAs during the study period.

4. Learning and Growth Perspective:

Table 8: Performance of Select PSBs with respect to Learning and Growth Perspective of the BSC Framework

Year	GNMT			GNNT			GCE		
	CB	UBI	UCO	CB	UBI	UCO	CB	UBI	UCO
2016	296.19	361.78	735.32	72.03	26.81	81.27	-54.50	358.83	15.48
2017	253.27	52.42	219.75	18.14	3.08	21.17	3.09	-81.88	-5.14
2018	49.58	45.59	299.52	15.01	28.70	34.09	20.85	15.89	-22.33
2019	268.82	560.76	130.59	25.50	18.80	8.23	31.90	-4.66	-30.90

2020	135.71	336.02	254.45	14.44	15.53	12.73	-44.13	24.95	89.79
2021	230.72	129.21	71.23	21.52	-14.95	9.51	173.24	82.66	14.79
2022	97.88	161.07	50.39	111.09	243.83	37.71	-10.92	4.35	27.49
2023	95.84	120.18	181.99	53.71	60.40	30.68	-25.18	309.10	34.68
2024	44.30	38.61	14.32	56.74	71.26	87.51	104.38	-46.12	25.67
2025	79.34	106.62	82.23	73.85	125.16	51.96	22.76	89.11	29.28
Mean	155.17	191.23	203.98	46.20	57.86	37.49	22.15	75.22	17.88
Std.dev	96.90	172.35	208.73	32.69	76.55	28.29	69.64	146.15	33.79

Source: Annual Reports of the banks during 2016-2025

Table 9: Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig
GNMT	Between Groups	12819.73	2	6409.86	0.23	0.79
	Within Groups	743974.99	27	27554.63		
	Total	756794.71	29			
GNNT	Between Groups	2090.30	2	1045.15	0.41	0.67
	Within Groups	69552.97	27	2576.04		
	Total	71643.27	29			
GCE	Between Groups	20410.45	2	10205.23	1.12	0.34
	Within Groups	246167.29	27	9117.31		
	Total	266577.74	29			

Tables 8 and 9 present the Learning and Growth Perspective performance of Canara Bank, Union Bank of India, and UCO Bank during 2016–2025. UCO Bank recorded the highest average GNMT, while Union Bank of India achieved the highest average GNNT and GCE. Although differences exist in the mean values, the ANOVA results show no statistically significant differences among the selected banks for GNMT ($p = 0.79$), GNNT ($p = 0.67$), and GCE ($p = 0.34$), as all p -values exceed 0.05. Therefore, the null hypothesis is accepted, indicating comparable performance among the banks under the Learning and Growth Perspective during the study period.

5. Environmental, Social and Governance Perspective:

Table 10: Performance of Select PSBs with respect to Environmental, Social and Governance Perspective of the BSC Framework

Year	PCENP			GNPBA			RPSATA		
	CB	UBI	UCO	CB	UBI	UCO	CB	UBI	UCO
2016	0.100	0.105	0.100	0.304	0.380	0.723	0.485	0.456	0.458

2017	0.129	0.113	0.100	-0.028	0.271	-0.108	0.500	0.464	0.452
2018	0.100	0.100	0.100	0.204	0.365	0.261	0.514	0.483	0.473
2019	0.168	0.100	0.100	0.118	0.235	0.251	0.520	0.489	0.475
2020	0.100	0.100	0.100	0.150	0.247	0.222	0.534	0.463	0.516
2021	0.110	0.100	0.139	0.914	1.030	0.269	0.570	0.528	0.549
2022	0.109	0.101	0.109	0.178	0.229	0.233	0.580	0.493	0.526
2023	0.106	0.102	0.106	0.291	0.245	0.194	0.564	0.475	0.494
2024	0.105	0.100	0.100	0.200	0.152	0.193	0.560	0.469	0.478
2025	0.106	0.101	0.105	0.223	0.209	0.207	0.568	0.479	0.499
Mean	0.113	0.102	0.106	0.255	0.336	0.245	0.539	0.480	0.492
Std.dev	0.021	0.004	0.012	0.250	0.253	0.200	0.033	0.021	0.031

Source: Annual Reports of the banks during 2016-2025

Table 11: Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig
PCENP	Between Groups	0.00063	2	0.0003	1.55	0.23
	Within Groups	0.00549	27	0.0002		
	Total	0.0061	29			
GNPBA	Between Groups	0.050	2	0.0252	0.45	0.64
	Within Groups	1.499	27	0.0555		
	Total	1.55	29			
RPSATA	Between Groups	0.020	2	0.0099	11.77037	0.00021
	Within Groups	0.023	27	0.0008		
	Total	0.043	29			

Tables 10 and 11 present the ESG Perspective performance of Canara Bank, Union Bank of India, and UCO Bank during 2016–2025. Canara Bank recorded the highest average PCENP and RPSATA, while Union Bank of India achieved the highest average GNPBA. The ANOVA results reveal no significant differences among the selected banks for PCENP ($p = 0.23$) and GNPBA ($p = 0.64$), leading to the acceptance of the null hypothesis. However, a significant difference was observed for RPSATA ($p = 0.00021$), resulting in the rejection of the null hypothesis. Thus, the banks exhibited similar performance in PCENP and GNPBA but differed significantly in RPSATA during the study period.

6. Profitability of PSBs (RoA & RoE)

Table 12: Profitability Analysis of PSBs

Year	RoA			RoE		
	CB	UBI	UCO	CB	UBI	UCO
2016	-0.4	0.43	-1.04	-10.65	6.75	-30.25
2017	0.29	0.22	-0.69	4.06	2.46	-19.84
2018	-0.58	-0.97	-1.95	-14.41	-20.8	-59.26
2019	0.14	-0.49	-1.77	1.26	-12.05	-37.65
2020	-0.2	-0.42	-0.93	-6.68	-9.36	-14.35
2021	0.33	0.37	0.16	5.15	4.97	1.06
2022	0.58	0.54	0.44	9.95	8.04	4.55
2023	0.91	0.75	0.71	16.13	11.78	8.21
2024	1.15	1.13	1.26	18.79	15.04	6.88
2025	0.88	0.81	0.80	14.96	11.62	6.55
Mean	0.31	0.24	-0.30	3.86	1.85	-13.41
Std.dev	0.58	0.66	1.13	11.54	11.89	23.15

Source: Annual Reports of the banks during 2016-2025

Table 13: Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig
RoA	Between Groups	2.22	2	1.11	1.63	0.21
	Within Groups	18.41	27	0.68		
	Total	20.63	29			
RoE	Between Groups	1782.94	2	891.47	3.30	0.05
	Within Groups	7294.87	27	270.18		
	Total	9077.81	29			

Tables 12 and 13 present the profitability performance of Canara Bank, Union Bank of India, and UCO Bank during 2016–2025 based on RoA and RoE. Canara Bank recorded the highest average RoA and RoE, while UCO Bank reported the lowest average values for both measures. The ANOVA results indicate no statistically significant differences among the selected banks with respect to RoA ($p = 0.21$) and RoE ($p = 0.05$), as the significance values are not below the 5 percent level. Therefore, the null hypothesis is accepted, suggesting that the selected banks exhibited comparable profitability performance during the study period despite differences in their average RoA and RoE.

7. Relationship between dependent(RoA & RoE) and Independent Variables of the BSC Framework:

Table 12: Correlation Matrix

		RoA	RoE	GP	CIR	DER	GII	CR	GB	TANB	ITAR	GNPAs	GNMT	GNNT	GCE	PCENP	GNPBA	RPSAT
RoA	Pearson Correlation	1																
	Sig. (2-tailed)																	
RoE	Pearson Correlation	.961**	1															
	Sig. (2-tailed)	.000																
GP	Pearson Correlation	.374*	.297	1														
	Sig. (2-tailed)	.042	.011															
CIR	Pearson Correlation	-.021	-.397*	.013	1													
	Sig. (2-tailed)	.828	.030	.049														
DER	Pearson Correlation	-.023	.019	.510**	.034	1												
	Sig. (2-tailed)	.816	.305	.004	.858													
GII	Pearson Correlation	.570**	.561**	.010	-.077	-.025	1											
				.1	.7	.1												

	Sig. (2-tailed)	0.001	0.001	0.057	0.068	0.180							
CR	Pearson Correlation	-.0123	-.0135	0.0326	0.042	0.0145	0.0210	1					
	Sig. (2-tailed)	0.516	0.477	0.079	0.0827	0.0445	0.0264						
GB	Pearson Correlation	-.0134	-.0133	0.0319	0.0213	0.0292	0.0115	0.0179	1				
	Sig. (2-tailed)	0.479	0.483	0.086	0.0828	0.071	0.0544	0.0344					
TA NB	Pearson Correlation	.636**	.654**	0.017	0.0289	0.0081	.499**	.382*	.365*	1			
	Sig. (2-tailed)	0.000	0.000	0.930	0.0121	0.0069	0.0005	0.037	0.047				
ITA R	Pearson Correlation	-.0344	.391*	0.0276	0.0061	.440*	0.0346	.606**	0.046	.721**	1		
	Sig. (2-tailed)	0.063	0.033	0.0139	0.0749	0.0051	0.0061	0.000	0.088	0.000			
GN PAs	Pearson Correlation	-.0247	-.0267	.390*	0.0103	.375*	0.0348	0.019	.444*	0.0166	0.0136	1	
	Sig. (2-tailed)	0.188	0.154	0.033	0.0587	0.0041	0.0059	0.0292	0.014	0.0381	0.0472		
GN MT	Pearson Correlation	-.464**	-.448*	0.0122	0.0013	0.0250	0.0239	0.0263	0.0223	0.0295	0.0122	.368*	1

		Sig. (2-tailed)	0.010	0.030	0.052	0.094	0.183	0.203	0.161	0.236	0.114	0.522	0.045		
GN	Pearson	0.349	0.284	0.248	-.091	-.036	0.101	0.069	-.62**	.373*	0.044	0.208	0.063	1	
NT	Sig. (2-tailed)	0.059	0.128	0.187	0.631	0.050	0.595	0.718	0.000	0.042	0.819	0.270	0.742		
GC	Pearson	0.252	0.285	0.057	-.087	-.059	0.214	0.020	0.112	0.164	-.060	0.283	0.093	1	
E	Sig. (2-tailed)	0.179	0.126	0.767	0.648	0.758	0.256	0.918	0.557	0.386	0.751	0.130	0.624		
PC	Pearson	0.146	0.195	0.014	-.014	0.090	0.048	0.161	0.135	0.068	0.107	0.066	0.023	1	
EN	Sig. (2-tailed)	0.441	0.302	0.941	0.457	0.638	0.802	0.394	0.478	0.720	0.575	0.727	0.904		
P	Pearson	-.006	-.003	-.028	-.014	0.001	0.025	0.018	.458*	0.050	0.040	.58**	0.246	1	
GN	Sig. (2-tailed)	0.768	0.840	0.132	0.442	0.996	0.169	0.942	0.011	0.794	0.833	0.001	0.199		
PB	Pearson	0.056	0.039	0.028	0.016	0.001	0.025	0.018	.458*	0.050	0.040	.58**	0.246	1	
A	Sig. (2-tailed)	0.768	0.840	0.132	0.442	0.996	0.169	0.942	0.011	0.794	0.833	0.001	0.199		
RP	Pearson	0.357	.429*	0.076	-.026	-.025	0.334	0.093	0.136	0.223	0.154	0.217	0.353	1	
SA	Sig. (2-tailed)	0.053	0.018	0.688	0.165	0.182	0.071	0.626	0.473	0.235	0.417	0.249	0.056		
TA	Pearson	0.057	0.018	0.068	0.165	0.182	0.071	0.626	0.473	0.235	0.417	0.249	0.056	1	
	Sig. (2-tailed)	0.053	0.018	0.688	0.165	0.182	0.071	0.626	0.473	0.235	0.417	0.249	0.056		

Note: *. Correlation is significant at the 0.05 level (2-tailed).

The relationship between profitability (RoA and RoE) and the BSC variables of the selected PSBs is examined using Pearson correlation and multiple regression analysis. The correlation results presented in Table 12 show that four variables namely GP, GII, TANB, and GNMT have a statistically significant association with RoA. GP, GII,

and TANB are positively correlated with RoA, whereas GNMT is negatively correlated. The remaining variables do not show a significant relationship with RoA.

Similarly, six variables namely CIR, GII, TANB, ITAR, GNMT, and RPSATA are significantly associated with RoE. Among them, GII, TANB, and RPSATA exhibit a positive relationship with RoE, while CIR, ITAR, and GNMT show a negative relationship. The remaining variables are not significantly correlated with RoE.

The regression analysis is performed using the following equations:

$$RoA = \alpha + \beta_1(GP) + \beta_2(GII) + \beta_3(TANB) + \beta_4(GNMT) + \varepsilon$$

$$RoE = \alpha + \beta_1(CIR) + \beta_2(GII) + \beta_3(TANB) + \beta_4(ITAR) + \beta_5(GNMT) + \beta_6(RPSATA) + \varepsilon$$

where RoA and RoE are the dependent variables.

The results of the multiple regression analysis for RoA are presented in Table 13. The critical value of 't' at the 5 percent level of significance is 2.06. The calculated t-values reported in Table 13 reveal that GP (t = 2.598) and TANB (t = 3.061) are statistically significant explanatory variables of RoA, as their calculated t-values exceed the critical value and their significance values are less than 0.05.

Table 13: Summary of multiple regression

a. Dependent Variable: RoA				
Model 1		Beta(Standardized Coefficients)	t	Sig.
Balanced Scorecard Framework	(Constant)		-2.299	0.030
Financial Perspective	GP	0.311	2.598	0.015
Customer Perspective	GII	0.269	1.949	0.063
Internal Business Process Perspective	TANB	0.428	3.061	0.005
Learning & Growth Perspective	GNMT	-0.236	-1.882	0.072

Table 14: Model Summary(RoA)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df 1	df 2	Sig. Change	F
1	.807 ^a	0.651	0.595	0.536867	0.651	11.646	4	25	0.000	

a. Predictors: (Constant), GNMT, GP, GII, TANB

However, GII and GNMT are not statistically significant explanatory variables since their calculated t-values fall within the acceptance region. Further, the positive beta coefficients of GP ($\beta = 0.311$) and TANB ($\beta = 0.428$) indicate a direct relationship with RoA, whereas the negative beta coefficient of GNMT ($\beta = -0.236$) indicates an inverse relationship with RoA. To examine whether the regression model as a whole is statistically significant, the coefficient of determination (R^2) is calculated. Table 14 reports that 65.1 percent of the variation in RoA is explained by the selected BSC variables included in the regression model.

The calculated F-value of 11.646 is greater than the critical F-value of 2.76. Hence, the regression model is statistically significant at the 5 percent level of significance and provides a good explanation of variations in RoA.

Table 15: Summary of multiple regression

a. Dependent Variable: RoE				
Model 1		Beta(Standardized Coefficients)	t	Sig.
Balanced Scorecard Framework	(Constant)		-0.254	0.802
Financial Perspective	CIR	-0.242	-1.696	0.103
Customer Perspective	GII	0.271	1.783	0.088
Internal Business Process Perspective	TANB	0.380	1.724	0.098
Internal Business Process Perspective	ITAR	0.038	0.199	0.844
Learning & Growth Perspective	GNMT	-0.239	-1.669	0.109
ESG Perspective	RPSATA	0.112	0.765	0.452

Table 16: Model Summary(RoE)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df 1	df 2	Sig. Change	F
1	.798 a	0.637	0.543	11.964827	0.637	6.735	6	23	0.000	

a. Predictors: (Constant), RPSATA, ITAR, CIR, GNMT, GII, TANB

Multiple regression analysis is also conducted to examine the influence of the selected BSC variables on RoE, and the results are presented in Table 15. The critical value of 't' at the 5 percent level of significance is 2.07. The calculated t-values indicate that none of the explanatory variables, namely CIR, GII, TANB, ITAR, GNMT, and RPSATA, individually exceed the critical t-value. Therefore, none of these variables emerge as statistically significant predictors of RoE at the 5 percent level of significance, although TANB, GII, CIR, and GNMT demonstrate comparatively stronger influence than the remaining variables. The positive beta coefficients of GII, TANB, ITAR, and RPSATA indicate a direct relationship with RoE, whereas CIR and GNMT exhibit an inverse relationship with RoE.

The overall significance of the RoE regression model is examined through the coefficient of determination and F-statistic. Table 16 reports an R² value of 0.637, indicating that 63.7 percent of the variation in RoE is explained by the selected BSC variables. The calculated F-value of 6.735 exceeds the critical F-value of 2.62, suggesting that the regression model as a whole is statistically significant at the 5 percent level of significance. Therefore, although individual variables do not significantly influence RoE, the combined effect of the selected BSC variables significantly explains variations in profitability measured through RoE.

5. Discussion of Findings

The present study evaluated the performance of select PSBs, namely CB, UBI, and UCO, using the Balanced Scorecard (BSC) framework comprising Financial, Customer, Internal Business Process, Learning & Growth, and ESG perspectives. Unlike traditional studies that focus primarily on financial indicators, the present study examined both financial and non-financial dimensions of performance and their influence on profitability measured through RoA and RoE.

The descriptive and ANOVA results revealed that the three PSBs exhibited varying levels of performance across the BSC perspectives. Significant differences among the banks were observed in CR, TANB, ITAR, NBMC, and RPSATA, while GP, CIR, DER, GII, GB, GNPA, GNMT, GNNT, GCE, PCENP, GNPBA, and RoA did not show statistically significant differences. RoE displayed marginal significance, indicating some variation in profitability among the selected banks.

The correlation analysis revealed that RoA had significant positive relationships with GP, GII, and TANB, while GNMT was significantly and negatively associated with RoA. Similarly, RoE was positively associated with GII, TANB, and RPSATA, whereas CIR, ITAR, and GNMT exhibited significant negative relationships with RoE. The results suggest that variables representing business expansion, customer growth, and operational outreach contribute positively to profitability, while higher operating inefficiencies and certain workforce-related costs adversely affect profitability.

The multiple regression results further indicate that GP and TANB are significant explanatory variables of RoA, with TANB emerging as the strongest predictor. Although GII positively influenced RoA and GNMT negatively

influenced RoA, their effects were not statistically significant. The model explained 65.1 percent of the variation in RoA and was statistically significant as the calculated F-value (11.646) exceeded the critical F-value (2.76).

For RoE, none of the selected variables were individually significant at the 5 percent level, although TANB and GII exerted positive effects while CIR and GNMT exerted negative effects. Nevertheless, the overall regression model was statistically significant as the calculated F-value (6.735) exceeded the critical F-value (2.62), explaining 63.7 percent of the variation in RoE. These findings indicate that profitability of PSBs is influenced more by customer expansion and internal business process efficiency than by ESG and learning-related indicators during the study period

6. Research Implications

The findings of the study provide several managerial implications for PSBs. The application of the BSC framework demonstrates that profitability cannot be assessed solely through traditional financial indicators. Management should focus on a balanced approach incorporating financial, customer, internal process, learning, and ESG dimensions to achieve sustainable performance improvement.

The results indicate that GP, GII, and TANB positively contribute to profitability, highlighting the importance of business growth, customer acquisition, and expansion of banking operations. Therefore, PSBs should strengthen customer outreach initiatives, improve service penetration, and expand productive banking assets to enhance profitability. Since CIR and GNMT exhibit negative associations with profitability, management should focus on controlling operating costs, improving workforce productivity, and optimizing resource utilization.

The significant contribution of TANB in both correlation and regression analyses suggests that efficient asset deployment and business expansion remain critical drivers of profitability. Policymakers and bank management may therefore prioritize operational efficiency, digital banking expansion, customer retention strategies, and effective cost management to improve overall financial performance. The study also demonstrates the usefulness of the BSC framework as a comprehensive performance evaluation tool for the banking sector

7. Limitations of the Study and Scope for Further Research

The present study is limited to three selected PSBs, namely CB, UBI, and UCO, and therefore the findings should be generalized with caution. The analysis is based on a specific study period and relies entirely on secondary data obtained from published sources, which may be subject to inherent limitations of secondary data.

Further, the study considered selected indicators under the five perspectives of the BSC framework. Although these variables provide a comprehensive view of bank performance, other relevant indicators may also influence profitability but were not included in the analysis. The study also focused only on internal performance determinants and did not incorporate external macroeconomic variables such as GDP growth, inflation, interest rates, monetary policy changes, or economic shocks.

Future research may extend the analysis by including a larger sample of PSBs and private sector banks, a longer time horizon, and additional financial and non-financial indicators. Researchers may also integrate macroeconomic variables and advanced econometric techniques to obtain deeper insights into the determinants of bank profitability. The present study can serve as a foundation for future research employing the BSC framework to evaluate banking performance and profitability in India

8. Conclusion

The present study concludes that the Extended Balanced Scorecard (BSC) framework provides a comprehensive and effective approach for evaluating the performance of Indian Public Sector Banks by integrating both financial and non-financial dimensions, including Environmental, Social, and Governance (ESG) factors. The comparative analysis of Canara Bank, Union Bank of India, and UCO Bank during the period 2016–2025 revealed that while the banks exhibited variations across different performance perspectives, only selected indicators demonstrated statistically significant differences. The findings further indicate that profitability is influenced not only by

traditional financial measures but also by customer-oriented and internal business process indicators, with Growth in Profits (GP) and Total Advances to Number of Branches (TANB) emerging as significant determinants of Return on Assets (RoA). Although no individual variable significantly explained Return on Equity (RoE), the overall regression model confirmed the collective importance of the selected Balanced Scorecard variables in explaining profitability. Therefore, the study highlights that the adoption of an Extended Balanced Scorecard framework enables a holistic assessment of bank performance, supports strategic decision-making, and offers valuable insights for bank management and policymakers to enhance operational efficiency, customer value, sustainable growth, and long-term competitiveness in the Indian banking sector.

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