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Relative Operational Cost Advantagein Commercial Banking Sector - A Comparative Study of Public Sector Banks and Private Sector Banks in India

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ABSTRACT:

Operational cost advantage provides astrategic edge to an organisation over its competitors. If an organisation hasan operational cost advantage, it possesses an enduring strength that may be used as a strategic shield against its competitors.It is an established fact that the organizations having operational cost advantage are much likely to perform better, this applies to commercial banks also, therefore commercial banks having operational cost advantage has much chance of survival and growth.In the last threedecades business environment for the banking business has changed drastically in India, with the financial sector reforms, especially with the entry deregulation for the foreign banks and private sector banks,moreover, with the latest entry of digitally-focused financial companies, the completion has become stiffer. Banking institutions areanindispensable part of the financial system as these help in the flow of funds from savors to productive activities of the economy. Higher cost-efficiency of their operation leads to higher profitability, which is a must to survive in a turbulent and highly competitive environment.This paper analyses and comparesthe operational costs of the public sector banks and private sector banks in India, using a set of parametric and non – parametric techniques, from 2009-10 to 2018-19.

The operational cost advantage accrues to an organisation as a result of the configuration of its tangible and intangible resources in such a manner that it provides an edge over its competitors. If due to its inherent capability,an organisation is so strategically positioned as it is capable of providing goods/services at a low cost so that it has an edge over its competitors. An organisation uses tangible resources like land and building, plant and equipment, vehicles and distribution centers, etc. as well as intangible resources like organizational culture, image resources, intellectual resources, etc. if configured successfully, improves the organizational capability to gain necessary competitive advantage for the firm. Organizational capabilities are the skills and competencies that a firm uses to transform inputs into outputs efficiently. Banks are enterprise units which take inputs in the form of deposits, human resource, technology, and fixed assets, deliver output in form of loans & advances for a higher return, keeping an eye on risk, liquidity, profitability, and efficiency of their operation.An attentive eye is required that enables financial institutions in identifying management problems and protecting the faithof the citizens,aspoor efficiency and health of these institutionscan threaten the entire financial system of a country. The quality of functioning of commercial bankshavea very significant impact on the growth rate of national income and fostering economic development,through identifying and funding productive activities in the economy. The high efficiency in the intermediation process of funds leads to the optimal utilization of these funds for productive activities and fostering the growth of the economy.So the efficiency of operation of commercial banks is a must for the survival in the competitive environment.

The government of India, due toits inclination towards a socialistic pattern of society and the perception that banks if brought under social control, will be more helpful in the nation's planned development strategy by mobilization of domestic financial resources in the desired direction, nationalised 14 major private banks, having deposit base of 50cr or more, in the year 1969,another 6 private banks were also taken in social control in 1980, making the list of nationalised banks to 20, apart from SBI and its seven subsidiaries which were already taken under social control since 1955.Therefore,state-owned banks, working in a highly regulated environment, dominated the pitch of commercial banking in India for a long time.After the balance of payment crisis of 1990, and a new government in office in 1991, a regime till nowadvocating for import-substitution based model, has moved towards the export-led-growth model, implemented new economic policy, and brought out a comprehensive change in the Indian financial system i.e.the abolition of branch licensing, deregulation of interest rates, liberalization of capital market norms and allowing the entry of new private sector banks and foreign banks. These deregulation measures paved the way for theentry of a large number of private sector banks and foreign banks,thereby increased the degree of competition in the banking industry. Further,the banking industry hasnow been facing a high degree of competition in the fund transfer and managementnot only from traditional financial sector firms: Non -Banking Financial Companies (NBFC), Insurance Companies, Financing Institutions, Development Banks, capital market, etc. but also facing a challenge fromdigitally-focused financial companies and other non-banking competitors which are introducing new distribution channels,emerging from the advancement of Information and communication technology. These digital-focused companies are capable of creating mobile-focused financial products and services more efficiently, moreover,have radically changed the traditional retail banking business model and are rewriting the rule of doing the banking business. So,in the new millennium, banks are facing the challenge of increased competition, demanding consumers, and shrinking margins, as well as have to bring new choices of delivery systems,changes in human resources and have to make a massive investment in technologies.

As perthe economic theory, there are two ways of uplifting the bottom line/ profitability: firstly, byincreasing the topline means increasing the revenues, and secondly, by decreasing the cost of operations. The first option, growth in revenue, may not be fruitful as may be offset bythe substantially increased cost of operation or have been limited due to increased competition.The second option of optimizing the banking channels and reducing the operational cost seems to be far better. Moreover, savings in operational cost, providean opportunity for banks to invest in strategic programs of developing new financial products and taping customers more efficiently to have a competitive advantage. Banks aiming at reducing cost and having a positive customer experience, are going for effective digital transformation which resulted in the automation of core banking services, eliminating the paperwork, automating more processes, promoting self-service channels, and rationalization of product portfolio by offering more customer-targeted products.Hence, in this new environment, to besustainable, competitive, and profitable, banks in India have to learn to manage cost-efficiently by re-organizing their core business models.

Althougha large number of studies have found that private ownership has a positive effect on bank performance in developing countries,the empirical evidence of studies, directed towards measuring and comparing the efficiency ofcommercial banks in India, contributed by a large number of scholars i.e. Angadi and Devaraj (1983), Das A. (1997), Bhattacharyya at el (1997), Sarkar and Das (1997), Sathye (2003), Shanmugam (2004), Das and Ghosh (2006) and Varadi et al (2009),has been mixed.Sarkar and Bhaumik (1998) find a non-significant difference in performance between public sector banks and private banks.Shirai (2002) concludes that "in the initial stage of reforms, foreign banks and private sector banks perform better than public sector banks in terms of profitability, earnings efficiency and cost efficiency but such differences have diminished as public sector banks have improved profitability and cost-efficiency.

After the 50 years of bringing the banks under social control in India,where public sector banks dominated the pitch of commercial banking in a highly regulated environment,now in the new millennium with the increased degree of competition not only from the other commercial banks but also from theother non-banking competitors and mobile-focused fund transfer companies,it is right time to assessthe performance of public sector banks vis-a-vis private sector banks. The present studyanalyses and compares,using a set of parametric and non-parametric techniques, theoperational costs ofthe public sector banks (PSBs) andprivate sector banks (PrSBs) in India from 2009-10 to 2018-19.

RESEARCH DESIGN

This study is based on secondary data of 39 Commercial Banks including 20 Public Sector Banks (PSBs) and 19 Private Sector Banks (PrSBs)of ten years from 2009-10 to 2018-19, collected from various published sources. To analyze the operational costadvantage of sample banks the study analyzes the following parameters of operational costs of a banking company:

1) Wage bills to total income indicate the proportion of income spent on payments to and provisions for employees.
2) Wage bills to total expense, indicates the proportion of total expenses spend on payment to and provisions for employees.
3) Burden to interest income indicates the proportion of burden (non-interest expenses less non-interest income) with the interest income.
4) Burden to total assets indicates the ratio of burden to total assets.

5) Intermediation cost to total assets indicates the ratio of operational costs to the total assets.
6) Business per employee indicates the per employeerupee worth of business of a bank.
7) Composite Operational Cost Advantage Score of Banks:composite operational cost advantage scoreof banks is calculated by clubbing the performance of the bank on five parameters of operational cost i.e. Wage bills to total income, Wage bills to total expense, Burden to interest income, Burden to total assets and Intermediation cost to Total Assets. Composite operational cost advantage score is calculated for each bank by addition of ranks on the above stated six parameters and again the ranks are assigned based on rank's total, to arrive at ranking on composite operational cost advantage score of the banks. Average ranks are assigned for having the same rank's total. Here only a non-parametric testis being used to analyse and compare the banks on the composite operational cost advantage.

The study uses Average (A M), Standard Deviation (S.D), Ranking and Line Diagrams, etc. for analyzing the data. Arithmetic Mean and Standard Deviation (except for parameter 7) are calculated to test the hypothesis under parametric t-test. Ranks 1 to 39, are assigned to each bank based onthe performance of the bank on a specific parameter andthen summed up separately for both types of bank groups, for testing the hypothesis, Mann-Whitney U-Test isused as a non-parametric test.

HYPOTHESIS OF THE STUDY**:**

Hypothesis$_{1:}$ There is no significant difference in thewage bills to total income of the PSBs and that of the PrSBs.

Hypothesis$_{2:}$ There is no significant difference in thewage bills to total expenseof the PSBs and that of the PrSBs.

Hypothesis$_{3:}$ There is no significant difference in the burden to interest income of the PSBs and that of the PrSBs.

Hypothesis$_{4:}$ There is no significant difference in theburden to total assets of thePSBs and that of thePrSBs.

Hypothesis$_{5:}$ There is no significant difference in theintermediation cost to total assets of thePSBs and that of the PrSBs.

Hypothesis$_{6:}$ There is no significant difference in thebusiness per employee of the PSBs and that of the PrSBs.

Hypothesis$_{7:}$ There is no significant difference in the composite operational cost advantage score of banks of the PSBs and that of the PrSBs.

DATA ANALYSIS AND INTERPRETATIONS

Parameter-1Wage bills to Total Income

Wage bills to total income is a widely used ratio by academicians and professionals to judge the proportion of total income spent on compensation of employees.Column (4) of Table 1 indicates thatthe average wage bills to total income of the public sector banks (PSBs) is 10.89 and that of the private sector banks (PrSBs) is 11.04. In the year 2012-13, the wage bill to total income of the PSBs is the lowest (9.51) and that of PrSBs is the lowest (9.87). Wage bills to total income of PSBs is the highest (12.93) in the year 2018-19 and that of PrSBs is the highest (13.46) in the year 2010-11.Figure1, column(7)of Table 1, indicates that thewage bills to total income of thePSBs and that of thePrSBsarehaving a mean difference ranging from 0.138 to 1.073 during the study period2009-10 to 2018-19. The negative mean difference of wage bills to total income in column (7) of Table 1,

indicates that the wage bills to total income of PrSBs is more than that of PSBsfrom 2009-10 to 2016-16, afterward, it is less than that of the PSBs. Column (8) of Table 1 shows the results ofthe computed t-value, indicates that the t-value is not significant in any of the year as well as on average wage bill to total income. Similar results are advocated byMann-Whitney U-Test inTable 2,as the computed z-valueis less than the corresponding tabulated value 1.96,in all the years. Therefore both sample groups do not differ statistically in terms of wage bills to total income. Hypothesis$_1$ is accepted and concluded that there is no significant difference in wage bills to total income of PSBs and PrSBs from 2009-10 to 2018-19.

FIGURE 1

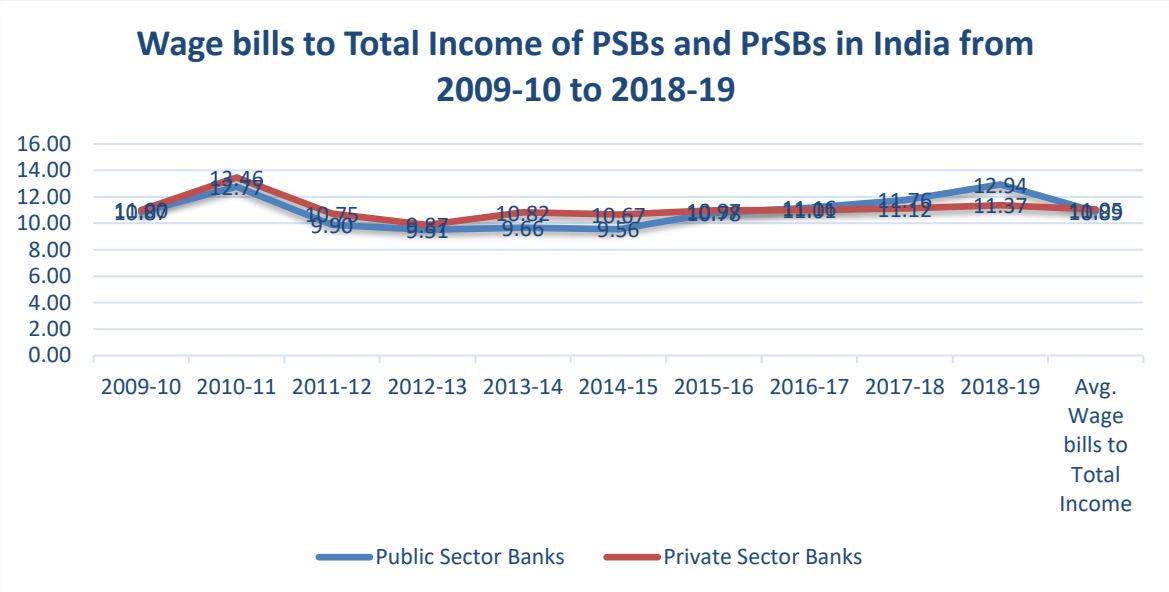

TABLE 1

Wage bills to Total Income of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Parametric T-Test)							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Ownership Group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t-value
2009-10	PSB	20	10.87	2.322	0.519	-0.138	-0.146
	PrSB	19	11.00	3.496	0.802		
2010-11	PSB	20	12.77	3.183	0.712	-0.691	-0.409
	PrSB	19	13.46	6.814	1.563		
2011-12	PSB	20	9.90	2.148	0.48	-0.851	-0.881
	PrSB	19	10.75	3.718	0.853		
2012-13	PSB	20	9.51	2.008	0.449	-0.363	-0.473
	PrSB	19	9.87	2.741	0.629		
2013-14	PSB	20	9.66	2.166	0.484	-0.565	-0.698
	PrSB	19	10.22	2.858	0.656		
2014-15	PSB	20	9.60	2.099	0.469	-1.073	-1.277
	PrSB	19	10.67	3.080	0.707		

2015-16	PSB	20	10.78	2.944	0.658	-0.188	-0.178
	PrSB	19	10.97	3.639	0.835		
2016-17	PSB	20	11.16	2.329	0.521	0.154	0.173
	PrSB	19	11.01	3.166	0.726		
2017-18	PSB	20	11.76	2.934	0.656	0.638	0.605
	PrSB	19	11.12	3.632	0.833		
2018-19	PSB	20	12.94	3.970	0.888	1.565	1.11
	PrSB	19	11.37	4.818	1.105		
Average Wage bills to Total Income	PSB	20	10.89	2.092	0.468	-0.151	-0.169
	PrSB	19	11.05	3.382	0.776		
Source : (RBI Publications -Statistical Tables Relating to Banks) * Indicates a value is significant							

TABLE 2

Wage bills to Total Income of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Non-parametric Test)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Average Wage bills to Total Income
Mann-Whitney U	166	164	187.5	187	174.5	156	183	167	154.5	131	182
Wilcoxon W	356	354	377.5	397	384.5	366	373	357	344.5	321	372
Z	-0.674	-0.731	-0.07	-0.084	-0.436	-0.955	-0.197	-0.646	-0.998	-1.658	-0.225

Parameter-2Wage bills to Total Expense

Wage bills to total expenses is another widely used ratio to show the part of total expenses spent on the compensation of employees in any banking undertaking.Table 3 indicates that the wage bills to total expenses of the PSBs is the lowest (11.52) in the year 2014-15 and that of the PrSBs is the lowest (12.20) in the year 2012-13. The wage bills to total expenses of the PSBs is the highest (16.47) and that of the PrSBs is the highest (16.88) in the year 2010-11.An overview of Figure2 and column (7) of Table 3, indicates that the wage bills to total expense of the PSBs and that of the PrSBs are having a mean difference ranging from 0.240 to 1.60 during the study period2009-10 to 2018-19. Column (7) of Table 3 showing a negative difference in wage bills to total expenses, indicates that wage bills to total expenses of the PrSBsis higher than that of the PSBs from 2009-10 to 2017-18, but in the year 2018-19, it isthe lower than that ofthe PSBs.

Column (8) of Table 3 shows that the t-value has not been significant between the PSBs and the PrSBs in all the years. Similar results are advocated bythe Mann-Whitney U-Test inTable 4,as computed z-value has not been significant in all the years as well as on average wage bills to total expenses, therefore both sample groups do not differ statistically in terms of wage bills to total expenses from 2009-10 to 2018-19.Hypothesi$_2$ is accepted and concluded that there is no significant difference in wage bills to total expense of the PSBS and that of the PrSBs from 2009-10 to 2018-19.

FIGURE 2

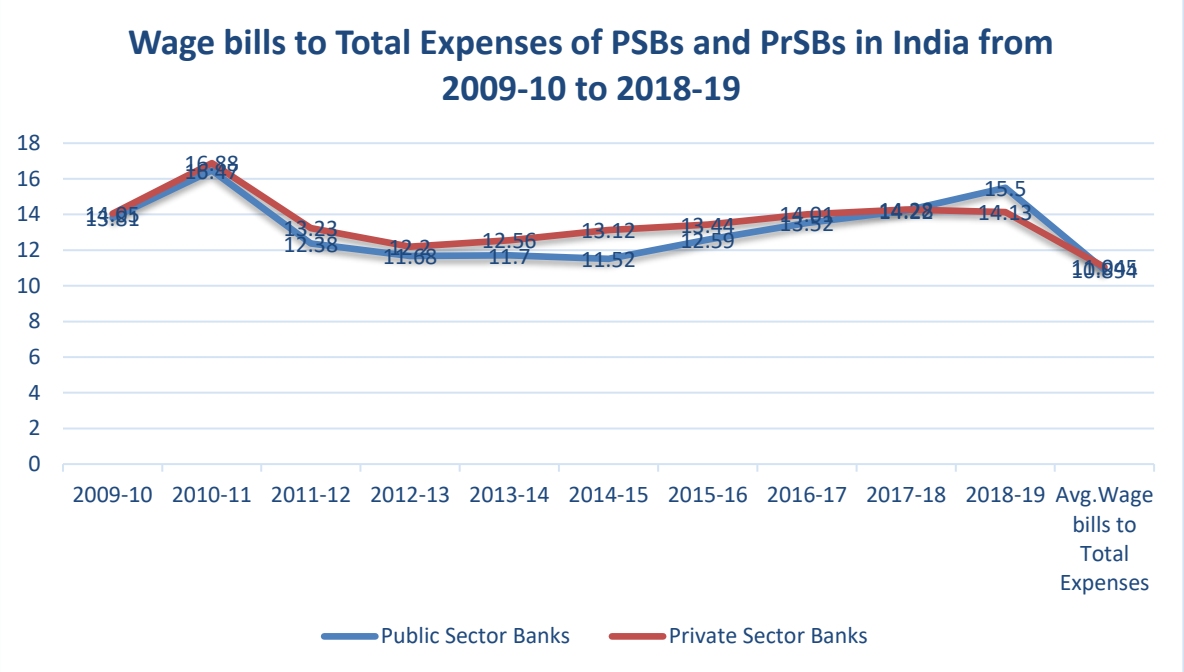

TABLE 3

Wage bills to Total Expenses of PSBs and PrSBs from 2009-10 to 2018-19							
(Results of Parametric Test)							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Ownership Group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t-value
2009-10	PSB	20	13.81	3.106	0.695	-0.240	-0.217
	PrSB	19	14.05	3.798	0.871		
2010-11	PSB	20	16.47	3.732	0.835	-0.409	-0.237
	PrSB	19	16.88	6.71	1.539		
2011-12	PSB	20	12.38	2.76	0.617	-0.851	-0.803
	PrSB	19	13.23	3.807	0.873		
2012-13	PSB	20	11.68	2.555	0.571	-0.521	-0.605
	PrSB	19	12.20	2.825	0.648		
2013-14	PSB	20	11.70	2.672	0.597	-0.86	-0.987
	PrSB	19	12.56	2.77	0.636		
2014-15	PSB	20	11.52	2.638	0.59	-1.60	-1.824

	PrSB	19	13.12	2.841	0.652		
2015-16	PSB	20	12.59	3.012	0.674	-0.846	-0.829
	PrSB	19	13.44	3.36	0.771		
2016-17	PSB	20	13.52	2.493	0.557	-0.491	-0.56
	PrSB	19	14.01	2.974	0.682		
2017-18	PSB	20	14.22	3.006	0.672	-0.067	-0.065
	PrSB	19	14.28	3.466	0.795		
2018-19	PSB	20	15.50	3.662	0.819	1.366	1.031
	PrSB	19	14.13	4.582	1.051		
Average Wage bills to Total Expenses	PSB	20	13.34	2.426	0.542	-0.452	-0.498
	PrSB	19	13.79	3.211	0.737		
Source : (RBI Publications -Statistical Tables Relating to Banks)							

TABLE 4

Wage bills to Total Expenses of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Non-parametric Test)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Avg. Wage bills to Total Expenses
Mann-Whitney U	184	167	184	172.5	160	131.5	172	180	171	128	189
Wilcoxon W	374	357	394	382.5	370	341.5	382	370	361	318	399
Z	-0.169	-0.646	-0.169	-0.492	-0.843	-1.644	-0.506	-0.281	-0.534	-1.742	-0.028

Parameter-3 Burden to Interest Income

Figure 3,column (4)of Table 5 hints that the average burden to interest income of the PSBs is 8.27 and that of the PrSBs is 10.27, it further indicates that in the year 2009-10, the burden to interest income of the PSBs is the lowest (5.469) and that of PrSBs is the lowest (8.13). The burden to interest income of PSBs is the highest (1.72) and that of PrSBs is the highest (13.01) in the year 2018-19.Column (7) of Table 5 shows that the negative mean difference ranges from1.287 to2.675,which hints that the burden to interest income of the PrSBs remained higher in all the years.Column (8) of Table 5indicates that the calculated t-value is not significant during the study period as well as for the averageburden to interest income. Table 6revealing the results ofthe Mann-Whitney U-Test, indicates that though the ranks of the PSBs are relatively higher but statistically there is no significant difference in the burden to interest income of both the banking groups. Hypothesi$_3$ is accepted and concluded that there is no significant difference in burden to interest income of the PSBs and that of the PrSBs during the study period.

FIGURE 3

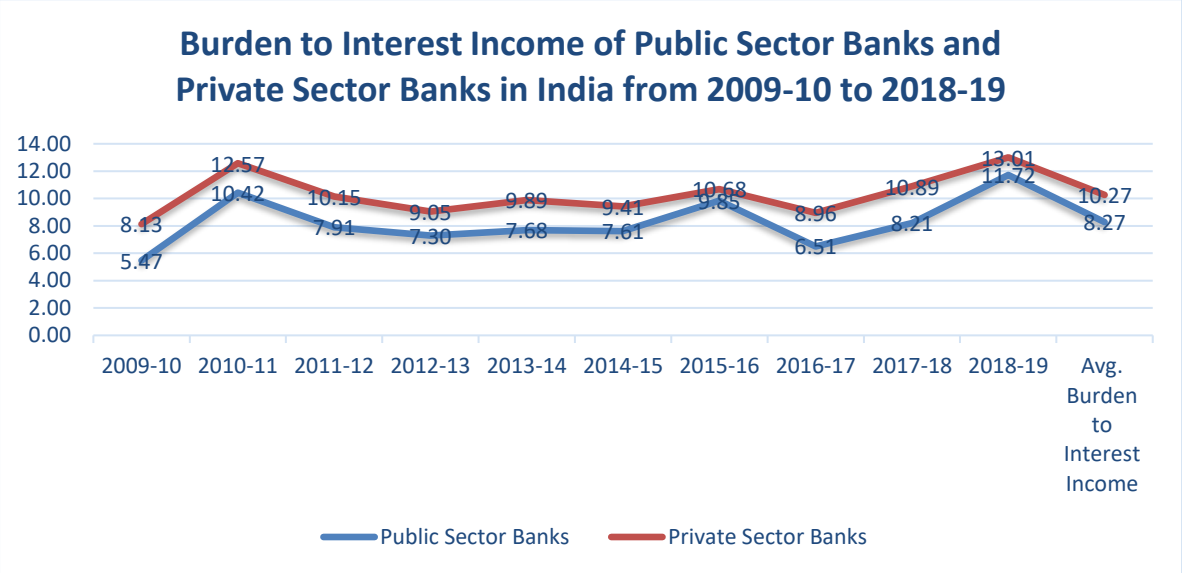

TABLE 5

Burden to Interest Income of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Parametric Test)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Ownership Group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t-value
2009-10	PSB	20	5.469	3.955	0.884	-2.662	-1.309
	PrSB	19	8.130	8.14	1.867		
2010-11	PSB	20	10.422	4.347	0.972	-2.147	-0.881
	PrSB	19	12.570	9.957	2.284		
2011-12	PSB	20	7.912	2.933	0.656	-2.235	-1.373
	PrSB	19	10.146	6.634	1.522		
2012-13	PSB	20	7.298	2.942	0.658	-1.754	-1.306
	PrSB	19	9.052	5.197	1.192		
2013-14	PSB	20	7.684	2.998	0.67	-2.207	-1.498
	PrSB	19	9.891	5.828	1.337		
2014-15	PSB	20	7.613	3.428	0.767	-1.800	-1.179
	PrSB	19	9.413	5.857	1.344		
2015-16	PSB	20	9.848	3.633	0.812	-0.828	-0.446
	PrSB	19	10.676	7.427	1.704		
2016-17	PSB	20	6.509	3.593	0.803	-2.454	-1.376

	PrSB	19	8.963	7.079	1.624		
2017-18	PSB	20	8.213	5.41	1.21	-2.675	-1.304
	PrSB	19	10.888	7.307	1.676		
2018-19	PSB	20	11.721	5.443	1.217	-1.287	-0.613
	PrSB	19	13.008	7.556	1.733		
Average Burden to Interest Income	PSB	20	8.269	3.041	0.68	-2.005	-1.254
	PrSB	19	10.274	6.439	1.477		

TABLE 6

Burden to Interest Income of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Non-parametric Test)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Avg. Burden to Interest Income
Mann-Whitney U	160	186	160.5	155	134	144.5	167	128	156	177	149
Wilcoxon W	370	396	370.5	365	344	354.5	377	338	366	387	359
Z	-0.843	-0.112	-0.829	-0.983	-1.573	-1.279	-0.646	-1.742	-0.955	-0.365	-1.152

Parameter-4 Burden to Total Assets

Figure 4, column (4) of Table 7 shows that the average burden to total assets of the PSBs is 0.65 and that of PrSBs is 0.92, it further indicates thatin the year 2009-10, the burden to total assets of the PSBs is the lowest (0.421) and that of PrSBs is the lowest (0.682). The burden to total assets of the PSBs is the highest (0.821) and that of PrSBs is the highest (1.066) in the year 2018-19.An overview view ofFigure 4, column (7) of Table 7 showinga negative mean difference between the burden to total assets ofthe PSBs and the PrSBs hints that the burden to total assets of the PrSBs remained highthan that of the PSBs ranging from 0.208 to 0.316 in all the study period Column (8) of Table 7 shows that the computed t valuehas not been found statistically significant as well as on average burden to total assets, except for the years 2013-14, 2016-17, and 2017-18. Table 8exhibits the results of the Mann-Whitney U-Test, indicating that there is no significant difference in the burden to total assetsof the PSBs and that of the PrSBs, except for the years 2013-14 and 2016-17. Onthe average burden to total assets, there is no significant difference in banking groups. Hypothesi$_4$ is accepted and concluded that there is no significant difference in the burden to total assets of the PSBs and that of PrSBs during the study period.

FIGURE 4

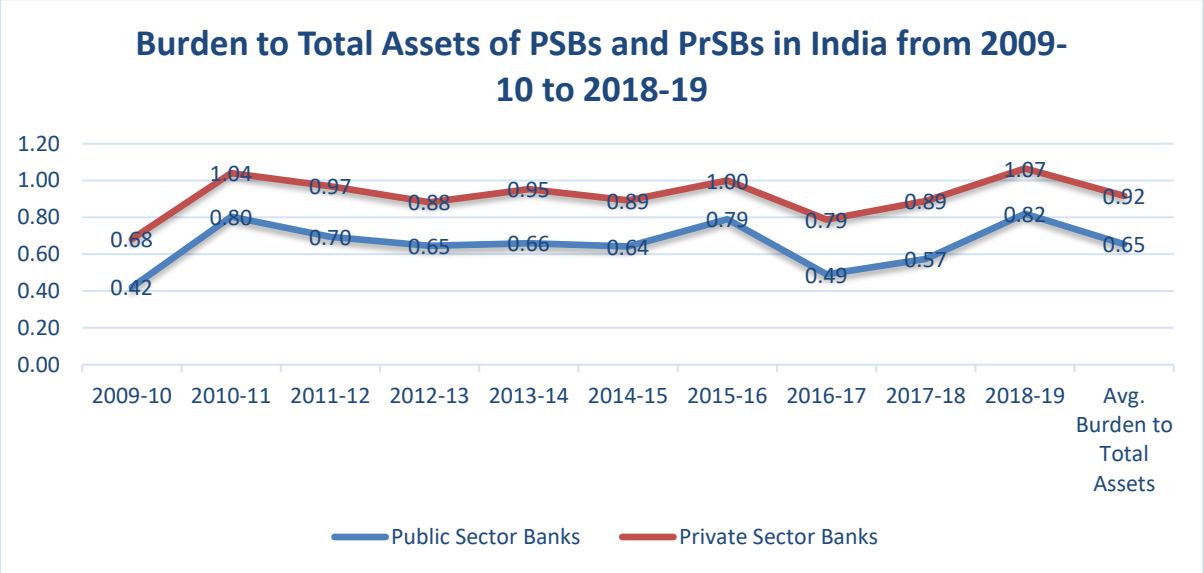

TABLE 7

Burden to Total Assets of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Parametric Test)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Ownership Group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t-value
2009-10	PSB	20	0.421	0.305	0.068	-0.261	-1.620
	PrSB	19	0.682	0.650	0.149		
2010-11	PSB	20	0.804	0.332	0.074	-0.237	-1.263
	PrSB	19	1.041	0.767	0.176		
2011-12	PSB	20	0.695	0.270	0.060	-0.275	-1.786
	PrSB	19	0.970	0.631	0.145		
2012-13	PSB	20	0.645	0.271	0.061	-0.239	-1.864
	PrSB	19	0.883	0.501	0.115		
2013-14	PSB	20	0.660	0.276	0.062	-0.293	-2.083*
	PrSB	19	0.953	0.551	0.126		
2014-15	PSB	20	0.643	0.304	0.068	-0.250	-1.762
	PrSB	19	0.892	0.552	0.127		
2015-16	PSB	20	0.791	0.296	0.066	-0.208	-1.239
	PrSB	19	1.000	0.689	0.158		
2016-17	PSB	20	0.491	0.288	0.064	-0.298	-1.984*
	PrSB	19	0.789	0.604	0.139		
2017-18	PSB	20	0.574	0.377	0.084	-0.316	-1.992*
	PrSB	19	0.890	0.585	0.134		
2018-19	PSB	20	0.820	0.399	0.089	-0.246	-1.485
	PrSB	19	1.066	0.617	0.141		

Average Burden to Total Assets	PSB	20	0.654	0.248	0.055	-0.263	-1.898
	PrSB	19	0.917	0.564	0.129		
Source : (RBI Publications -Statistical Tables Relating to Banks) *Indicates thevalue is significant							

TABLE 8

Burden to Total Assets of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Non-parametric Test)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Average Burden to Total Assets
Mann-Whitney U	145.5	163.5	144.5	130.5	112.5	125	142.5	109.5	122.5	146	124
Wilcoxon W	355.5	373.5	354.5	340.5	322.5	335	352.5	319.5	332.5	356	334
Z	-1.251	-0.745	-1.279	-1.672	-2.178*	-1.827	-1.335	-2.263*	-1.898	-1.237	-1.854
* Value indicates significant difference											

Parameter-5 Intermediation Cost to Total Assets

Intermediation cost to total assets is an important indicator of the level of intermediation operational costs of a banking unit. It is a widely used parameter of the efficiency with which a banking undertaking is capable of performing its operation of banking activities.

An overview view of Figure 5,column (7) of Table 9indicate that the mean difference of the intermediation cost to total assets of the PSBs and PrSBs is negative in all the years and the mean difference ranges from 0.541 to 0.801, indicates that the intermediation cost to total assets of the PrSBs is higher than that of the PSBs in all years of the study period.Table 9 shows that the intermediation cost to total assets of the PSBs is lowest (1.428) in the year2012-13 and that of the PrSBs is lowest (2.120) in the year 2009-10, theintermediation cost to total assets of the PSBs is the highest (1.737) in the year2018-19 and that for the PrSBs is the highest (2.290) in the year 2016-17. Column (8) of Table 9 indicates that the computed t-value is significant in all the years, as well as in the average intermediation cost to total assets. Table 10 reveals the results of the Mann-Whitney U-Test, thePSBs having higher ranks perform better than the PrSBs in intermediation cost to total assets. Hypothesis$_5$ is rejected and concluded that the intermediation cost to total assets of the PSBs and that of the PrSBs differs significantly during the study period. As per ranking in Table 13, ranking positions 1st to 16 are occupied by thePSBs i.e. IDBI Bank, UCO Bank, Corporation Bank are placed on 1st,2nd,3rd ranking positions followed by Bank of Baroda, Canara Bank, Oriental Bank of Commerce on 4th, 5th and 6th rank positions respectively.

FIGURE 5

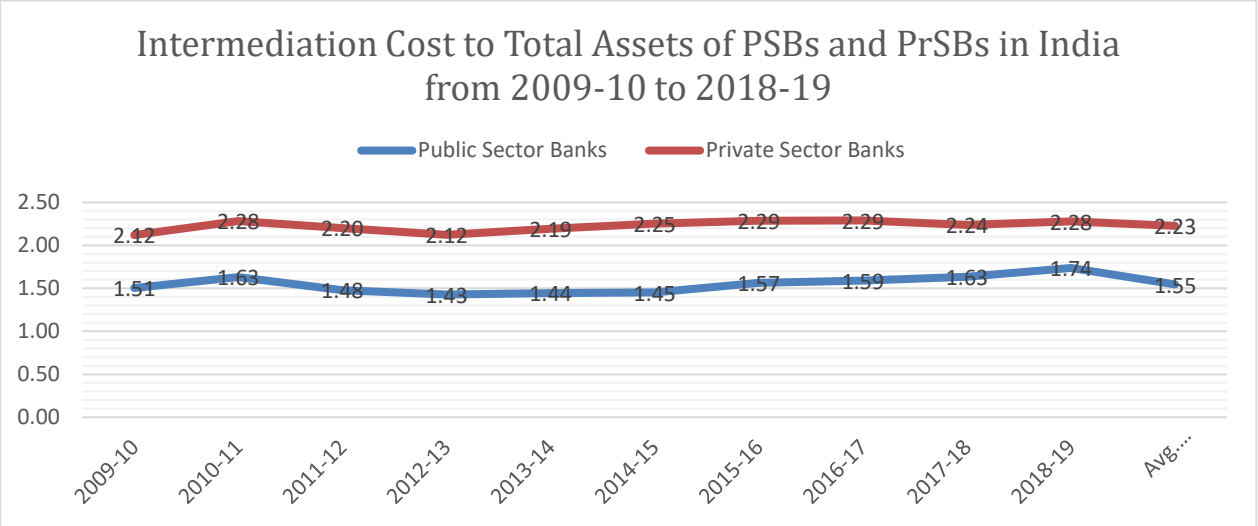

TABLE 9

Intermediation Cost to Total Assets of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Parametric Test)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Ownership Group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t-value
2009-10	PSB	20	1.506	0.232	0.052	-0.613	-3.996*
	PrSB	19	2.120	0.644	0.148		
2010-11	PSB	20	1.631	0.29	0.065	-0.652	-3.711*
	PrSB	19	2.282	0.727	0.167		
2011-12	PSB	20	1.477	0.232	0.052	-0.725	-4.796*
	PrSB	19	2.201	0.633	0.145		
2012-13	PSB	20	1.428	0.222	0.05	-0.695	-5.843*
	PrSB	19	2.123	0.481	0.11		
2013-14	PSB	20	1.444	0.241	0.054	-0.751	-6.685*
	PrSB	19	2.194	0.437	0.1		
2014-15	PSB	20	1.452	0.226	0.051	-0.801	-6.948*
	PrSB	19	2.253	0.46	0.106		
2015-16	PSB	20	1.565	0.302	0.067	-0.723	-5.541*
	PrSB	19	2.287	0.495	0.114		
2016-17	PSB	20	1.591	0.222	0.05	-0.698	-7.012*
	PrSB	19	2.290	0.383	0.088		
2017-18	PSB	20	1.633	0.248	0.055	-0.607	-6.051*
	PrSB	19	2.240	0.37	0.085		
2018-19	PSB	20	1.737	0.321	0.072	-0.541	-4.425*
	PrSB	19	2.278	0.437	0.1		
Average	PSB	20	1.546	0.196	0.044	-0.681	-5.983*

Intermediation Cost To Total Assets	PrSB	19	2.227	0.467	0.107		

Source : (RBI Publications -Statistical Tables Relating to Banks) *Indicates thevalue is significant

TABLE 10

Intermediation Cost to Total Assets of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Non-parametric Test)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Avg. Intermediation Cost To Total Assets
Mann-Whitney U	58	80.5	38	23	14	7	25	12	27	46	9
Wilcoxon W	268	290.5	248	233	224	217	235	222	237	256	219
Z	-3.71*	-3.08*	-4.27*	-4.69*	-4.95*	-5.14*	-4.64*	-5.00*	-4.58*	-4.05*	-5.09*

* Value indicates significant difference

Parameter-6 Business per employee

Business per employee is a useful indicator for judging the work-culture and performance of the work-force with which a banking undertaking is capable of performing its operation. High business per employee is desirable as it is a parameter ofhigher efficiency of a banking institution.As per Figure 6andTable 11, business per employee of both banking groups has been showing an increasing trend. Column (7) of Table 11 shows the positive mean difference of business per employee, indicates that the PSBs have more business per employee thanthePrSBs during the entire study period, it further indicates that the mean difference has been showing an increasing trend from 2009-10 to 2013-14, as it increasedfrom Rs. 25.40 million per employee in 2009-10 toRs.56.90 million per employee in the year 2013-14,thereafter this mean difference showing a decreasing trend till 2018-19.The computed t-value in column (8) of Table 11is positive and statistically significant in all the years, as well as on theaverage business per employee, indicates that there is a significant difference in business per employee ofthe PSBs and that of the PrSBs in the study period. TheMann-Whitney U-Test in Table 12, indicates the same results.Hypothesis$_6$ is rejected and concluded that the business per employee of the PSBs and that of the PrSBs differs significantly during the study period. As per ranking in Table 13, ranking position 1st and 3rd to 13th are occupied by the PSBs i.e. IDBI Bank, Yes Bank, Corporation Bank is placed on 1st, 2nd, 3rd ranking positions followed by Bank of India, Oriental Bank of Commerce, Bank of Baroda, on 4th, 5th and 6th, ranking positions respectively.

FIGURE 6

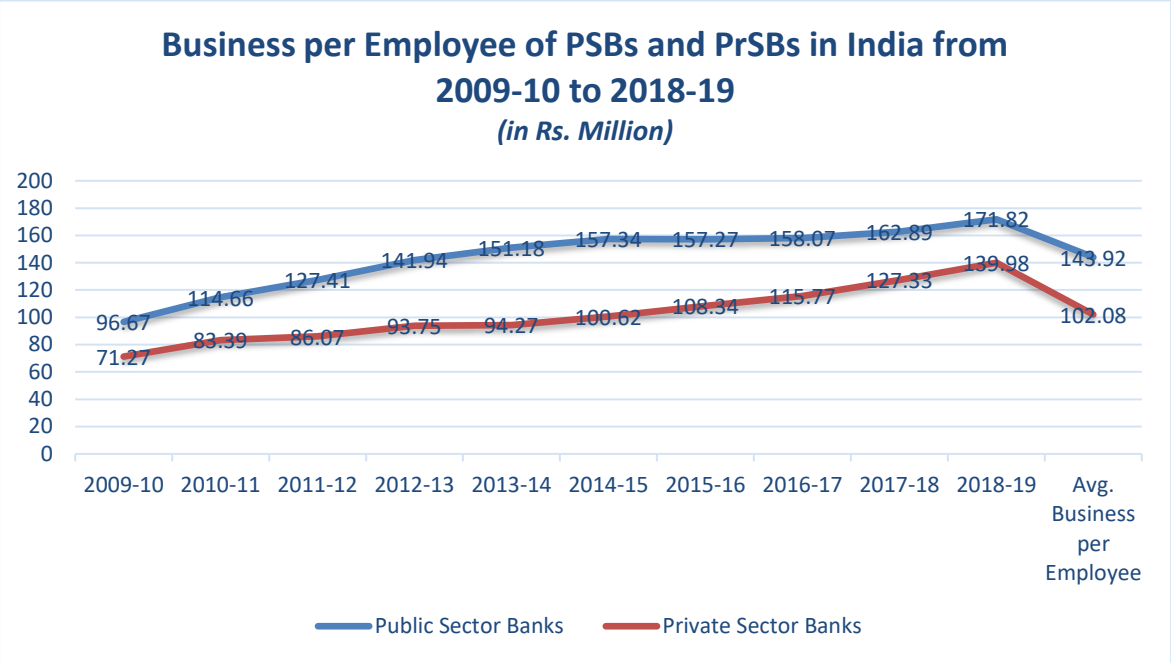

TABLE 11

Business per Employee of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Parametric Test)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Ownership Group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t-value
2009-10	PSB	20	96.67	38.101	8.52	25.4	2.329*
	PrSB	19	71.27	29.137	6.684		
2010-11	PSB	20	114.66	34.347	7.68	31.28	2.623*
	PrSB	19	83.39	40.024	9.182		
2011-12	PSB	20	127.41	32.798	7.334	41.34	4.135*
	PrSB	19	86.07	29.435	6.753		
2012-13	PSB	20	141.94	34.216	7.651	48.19	4.852*
	PrSB	19	93.75	27.199	6.24		
2013-14	PSB	20	151.18	33.234	7.431	56.9	6.173*
	PrSB	19	94.27	23.153	5.312		
2014-15	PSB	20	157.34	34.173	7.641	56.72	5.941*
	PrSB	19	100.62	24.35	5.586		
2015-16	PSB	20	157.2	29.361	6.565	48.93	5.488

			7				*
	PrSB	19	108.34	26.123	5.993		
2016-17	PSB	20	158.07	29.355	6.564	42.30	4.882*
	PrSB	19	115.77	24.363	5.589		
2017-18	PSB	20	162.89	26.56	5.939	35.57	3.662*
	PrSB	19	127.33	33.836	7.763		
2018-19	PSB	20	171.82	27.488	6.147	31.84	2.908*
	PrSB	19	139.98	40.043	9.186		
Average Business per Employee	PSB	20	143.92	28.982	6.481	41.85	4.620*
	PrSB	19	102.08	27.498	6.309		

Source : (RBI Publications -Statistical Tables Relating to Banks) *Indicates the value is significant

TABLE 12

Business per Employee of PSBs and PrSBs from 2009-10 to 2018-19 (Results of Non-parametric Test)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Average Business Per Employee
Mann-Whitney U Wilcoxon W	88 278	58 248	46 236	29.5 219.5	24 214	22 212	32.5 222.5	46 236	73 263	95 285	38 228
Z	-2.87*	-3.71*	-4.05*	-4.51*	-4.66*	-4.72*	-4.43*	-4.05*	-3.29*	-2.67*	-4.27*

* Value indicates significant difference

Parameter-7 Composite Operational Cost Advantage Score of Banks

The composite operational cost advantage score indicates the overall performance score of a banking undertaking in managing the operational costs. Table 14 shows the results of the Mann-Whitney U-test, as the computed z-value 2.234 is found significant.Therefore, the PSBs have the operational cost advantage over the PrSBs in commercial banking in India. Hypothesis$_7$ is rejected and concluded that the composite operational cost advantage score

of the PSBs and that of the PrSBsdiffer significantlyduring the study period. As per ranking in Table 13, ranking positions 1st, 2nd,3rdare occupied by IDBI Bank, Corporation Bank, Yes Bank, followed by ICICI Bank, Oriental Bank of Commerce, Canara Bank, on4th, 5th,and 6th ranking positions respectively.

TABLE 13

Composite Operational Cost Advantage Score of PSBs and PrSBs from 2009-10 to 2018-19								
Parameters	1	2	3	4	5	6		7
Name of the Parameters	**Wage bills to Total Income**	**Wage bills to Total Expense**	**Burden to Interest Income**	**Burden to Total Assets**	**Intermediation Cost to Total Assets**	**Business per Employee**	**Rank's Total**	**Composite Operational Cost Advantage Score of Banks**
Name and Type of Banks	Ranks	Ranks	Ranks	Ranks	Ranks	Ranks		Ranks
ALLAHABAD BANK (PSB)	23	24	20	18	12	15	112	**16**
ANDHRA BANK (PSB)	16	17	12	16	9	7	77	**9.5**
BANK OF BARODA (PSB)	14	16	13	8	4	6	61	**6**
BANK OF INDIA (PSB)	22	23	19	13	7	4	88	**13**
BANK OF MAHARASHTRA (PSB)	32	30	31	31	22	9	155	**31**
CANARA BANK (PSB)	12	12	8	6	5	11	54	**5**
CENTRAL BANK OF INDIA (PSB)	36	31	33	32	24	27	183	**32**
CORPORATION BANK (PSB)	2	2	5	5	3	3	20	**2**
DENA BANK (PSB)	29	26	30	29	18	16	148	**29.5**
IDBI BANK LIMITED (PSB)	1	1	2	2	1	1	8	**1**
INDIAN BANK(PSB)	25	28	21	20	14	10	118	**22**
INDIAN OVERSEAS BANK (PSB)	26	25	22	19	19	22	133	**25**
ORIENTAL BANK OF	8	7	9	9	6	5	44	**4**

COMMERCE (PSB)								
PUNJAB AND SIND BANK (PSB)	24	20	27	27	8	8	114	**18.5**
PUNJAB NATIONAL BANK (PSB)	30	35	16	15	15	17	128	**23**
SYNDICATE BANK (PSB)	28	29	29	25	13	18	142	**27**
UCO BANK (PSB)	15	13	15	12	2	20	77	**9.5**
UNION BANK OF INDIA (PSB)	17	14	11	14	10	12	78	**11**
UNITED BANK OF INDIA (PSB)	27	27	10	10	16	24	114	**18.5**
VIJAYA BANK (PSB)	21	19	26	23	11	13	113	**17**
Ranks Total of PSBs	**408**	**399**	**359**	**334**	**219**	**248**	**1967**	**320.5**
AXIS BANK LIMITED (PrSB)	4	5	4	4	32	14	63	**7**
CATHOLIC SYRIAN BANK LTD (PrSB)	39	39	38	39	37	37	229	**39**
CITY UNION BANK LIMITED (PrSB)	3	3	7	11	26	30	80	**12**
DCB BANK LIMITED (PrSB)	35	32	37	37	38	39	218	**37**
FEDERAL BANK LTD (PrSB)	20	22	25	26	28	21	142	**28**
HDFC BANK LTD. (PrSB)	9	18	28	30	34	29	148	**29.5**
ICICI BANK LIMITED (PrSB)	6	9	1	1	21	35	73	**8**
INDUSIND BANK LTD (PrSB)	7	6	6	7	35	34	95	**14**
JAMMU & KASHMIR BANK LTD (PrSB)	33	37	32	33	23	26	184	**33**
KARNATAKA BANK LTD (PrSB)	11	10	14	17	25	28	105	**15**
KARUR VYSYA BANK LTD	10	11	18	21	30	25	115	**20**

(PrSB)								
KOTAK MAHINDRA BANK LTD. (PrSB)	31	38	34	36	39	38	216	**36**
LAKSHMI VILAS BANK LTD (PrSB)	13	8	24	28	31	32	136	**26**
NAINITAL BANK LTD	34	34	36	35	27	33	199	**34**
RBL BANK LIMITED (PrSB)	37	36	35	34	33	31	206	**35**
SOUTH INDIAN BANK LTD (PrSB)	19	15	23	24	17	19	117	**21**
TAMILNAD MERCANTILE BANK LTD (PrSB)	18	21	17	22	29	23	130	**24**
THE DHANALAKSHMI BANK LTD (PrSB)	38	33	39	38	36	36	220	**38**
YES BANK LTD. (PrSB)	5	4	3	3	20	2	37	**3**
Ranks Total of PrSBs	**372**	**381**	**421**	**446**	**561**	**532**	**2713**	**459.5**

TABLE 14

Composite Operational Cost Advantage Score of PSBs and PrSBs from 2009-10 to 2018-19			
(Result of Mann Whitney U- Test)			
Public Sector Banks	Value	Private Sector Banks	Value
Rank's Total	320.5	Rank's Total	459.5
N_1	20	N_2	19
U_1	269.5	U_2	110.5
Computed z-value	2.234*		
*Indicates the value is significant			

SUMMARY AND CONCLUSIONS

In wage bills to total income and wage bills to total expense of public sector banks and that of private sector banks, there is no significant difference, therefore, inferences can be drawn that compensation package of employees does not have anyrelation with the type of ownership of the banking undertaking. Theemployee unions of public sector banks oppose the privatization ofthe PSBsfearing that the compensation package will not be alike in the

PrSBs. The wage bills to total income and wage bills to total expensesof the PSBs and that of the PrSBs do not differ significantly during the study period, therefore the notion of these banks employee unions that the private sector banks spend less part of their income on employee benefits and employee compensation package does not hold good.
In burden to total income and burden to total assets of the public sector banks and that of the private sector banks, there is no significant difference during the study period.
The public sector banks have operational cost advantage on intermediation cost to total assets, business per employee as well as on the composite operational cost advantage score of banks. The comparative operational cost advantage accrues to these public sector banks fromlearning experience for being in business over a long period, strong retail-base, favourable branch locations, and wide geographical coverage as well asfrom the perception of the general public that these banks are managed and controlled by the government, hence are safer for parking their money.The lowprofitability of thepublic sector banks remained a concern, due to high provisioning for the NPAs,a large number of these banks have reported negative profit per employee during the last four years.The issue of governance in these public sector bankshas remained a matter of public debate. The politically motivated portfolio of assets and lending practices in public sector banks, jeopardizing the quality of their assets, thereby creating a pressure of more provisioning for the NPAs,resulting in lowprofitability of these banks. The Government of India should ensure these banks be managed on corporate best practices so that they can capitalize on their operational cost advantage.

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