

Managerial Efficiency Analysis – A Comparative Study on Selected Public Sector and Private Sector Banks in India

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ABSTRACT

Banking industry in India has outperformed due to trust and confidence from the public. The question of stability can be answered through the efficiency of its operations both financially and managerially. The parameters to measure the efficiency are proved to be vivid and dynamic due to globalization and advent of foreign banks. This structural change has further forced individual banking institutions, especially state-owned banks, to inspect the performance of their branches and identify improvement directions so as to gain further competitive advantages. This paper aims to conduct a valid, fair and reliable evaluation on managerial efficiency of public and private sector Indian banks through three parameters namely Cash deposit ratio, Business per person and Profit per employee. Five banks were selected from public and private sector banks for the study where the data relating to above said parameters were collected for a period of ten years i.e. from 2006 to 2015. The data collected was analysed using both comparative and cross sectional analysis among the sectors and within the sectors using One Way ANOVA and t-test to know the statistical significance of the data using Ms Excel. It is observed that the managerial efficiency of public sector and private sector banks do not differ significantly.

Keywords: Business per employee, Cash-deposit ratio, Managerial Efficiency, Private sector banks, Public sector banks.

INTRODUCTION:

The financial system performs the essential function of channeling funds from savers to investors which allows the funds to flow from the deficit areas to surplus areas, where the role of banks is inseparable in this mediation of funds. Economic growth and prosperity of a country depends on the financial stability. Globalization has transformed the concept of banking from class banking to mass banking.

Asia Productivity Organization (APO) defines the productivity as:

Productivity is the sum total of efficiency and effectiveness. Efficiency is “Doing things right” and effectiveness is “Doing the right things”. Both efficiency and effectiveness prove crucial in any system where banking system is not an exception. Efficiency has become an essential emphasis in today’s highly competitive business environment. Efficiency measurement determines how banks provide an optimal combination of financial services with a set of inputs. There are quantitative and qualitative factors that speak about the efficiency of management in banks.

Sound management is one of the most important factors behind the performance of banks. Indicators of quality of management, however, are primarily applicable to individual institutions, and cannot be easily aggregated across the sector. Furthermore, given the qualitative nature of management, it is difficult to judge its soundness

just by looking at financial accounts of the banks. Nevertheless, cash to total deposit, business per employee and profit per employee helps in gauging the management efficiency of the banks. Enhanced efficiency results in profitability, safety and soundness of financial health in banks which further leads to innovation and expansion of the financial system. Therefore, investigation into the nature and causes of efficiency and productivity has always been the crux of interest of economic research.

LITERATURE REVIEW:

Kwan and Eisenbeis (1997) observed that Asset Quality is commonly used as a risk indicator for financial institutions, which also determines the reliability of capital ratios. Their study indicated that capitalization affects the operation of financial capitalization, affects the operation of financial institution. More the capital, higher is the efficiency.

Said and Saucier (2003) evaluated the liquidity, solvency and efficiency of Japanese Banks using CAMEL rating methodology. The study assessed the capital adequacy, assets and management quality, earnings ability and liquidity position.

Prasuna (2003) analyzed the performance of 65 Indian banks according to the CAMEL Model. The author concluded that better service quality, innovative products and better bargains were beneficial because of the prevailing tough competition.

Sarker (2005) scrutinized the CAMEL model for regulation and supervision of Islamic banks by the central banking Bangladesh. The study enabled the regulators and supervisors to get a Shariah benchmark to supervise and inspect Islamic banks and financial institutions from an Islamic perspective.

Gupta and Kaur(2008) assessed the performance of 20 old and 10 new Indian Private Sector Banks on the basis of Camel Model for the period of five years i.e., from 2003-07. Siva and Natarajan (2011) empirically tested the applicability of CAMEL norms and its consequential impact on the performance of SBI Groups. The study concluded that annual CAMEL scanning helps the commercial bank to diagnose its financial health and alert the bank to take preventive steps for its sustainability.

Chaudhry and Singh (2012) analyzed the impact of the financial reforms on the soundness of Indian Banking through its impact on the asset quality. The study identified the key players as risk management, NPA levels, effective cost management and financial inclusion.

OBJECTIVES OF THE STUDY:

The purpose of the present study is to evaluate the managerial health of the selected scheduled commercial banks in India with different ownership structure, such as public sector banks and private sector banks.

HYPOTHESES OF THE STUDY:

The present study tests the null hypotheses:

H0₁: The average Cash-deposit ratios of sample public sector banks do not differ significantly.

H0₂: The average Cash-deposit ratios of sample private sector banks do not differ significantly.

H0₃: The mean of Cash-deposit ratios of sample public and private sector banks do not differ significantly.

H0₄: The average Business per employee of sample public sector banks do not differ significantly.

H0₅: The average Business per employee of sample private sector banks do not differ significantly.

H0₆: The means of Business per employee of sample public and private sector banks do not differ significantly.

H0₇: The average Profit per employee of sample public sector banks do not differ significantly.

H0₈: The average Profit per employee of sample private sector banks do not differ significantly.

H0₉: The means of Profit per employee of sample public and private sector banks do not differ significantly.

METHODOLOGY OF THE STUDY:

The present study was conducted among five commercial banks in both Public sector and Private sector. The Public sector banks selected for the study are Andhra Bank(AB), Canara Bank(CAN), Central Bank(CB), Punjab National Bank(PNB), State Bank of India(SBI). The Private sector banks selected for the study are Axis Bank(AX), ICICI Bank(ICICI), HDFC Bank(HDFC), Indus Ind Bank(IINB) & Yes Bank(YES). The data of 10 years i.e. from 2005-2006 to 2014-15 is considered for the study. The analysis is carried out with the help of the following three variables:

Cash Deposit Ratio = Cash/ Total Deposit; Business per Employee = Total Income/ No. of Employees; Profit per Employee = Profit after Tax/ No. of Employees. Apart from these ratios the study also used statistical tools

like averages ,one-way ANOVA and independent t-test assuming unequal means.MS Excel was also used in the analysis to derive the results.

ANALYSIS AND INTERPRETATION OF RESULTS:

The analysis and interpretation part of the study is carried on in sequential order of the parameters mentioned in the methodology of the study. Thus, the discussions in terms of cross sectional are as follows:

Cash Deposit Ratio:

Table 1: Cash Deposit Ratios of sample Public sector banks

YEAR	AB	CAN	CB	PNB	SBI	MEAN
2006	11.38	6.77	5.08	19.54	5.69	9.692
2007	7.11	6.38	6.61	8.84	6.67	7.122
2008	9.91	8.67	10.45	9.16	9.58	9.554
2009	8.17	5.37	8.4	8.13	7.48	7.51
2010	8.62	6.69	10.49	7.35	7.62	8.154
2011	7.79	7.5	7.85	7.59	10.1	8.166
2012	5.25	5.44	6.68	4.87	5.18	5.484
2013	4.86	4.32	5.99	4.56	5.47	5.04
2014	5.57	5.26	4.96	4.92	6.09	5.36
2015	4.84	4.63	5.52	4.83	7.34	5.432
MEAN	7.35	6.103	7.203	7.979	7.122	7.1514

Source: RBI Statistical tables

Table 1 explains the Cash Deposit Ratio of sample Public sector banks. Cash Deposit Ratio of the selected Public sector banks varied between the highest of 9.692 times in 2006 and the lowest of 5.04 times in 2013 with ten years average of 7.1514times. The mean cash deposit of Punjab National Bank is highest and that of the Canara Bank is least among other public sector banks . The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of the samples taken in H_{01} . The results were shown in the Table 2.

Table 2:ANOVA results for the average cash deposit ratios of the sample public sector banks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	18.26629	4	4.566572	0.68121	0.608621	2.578739
Within Groups	301.6626	45	6.703614			
Total	319.9289	49				

Source: ANOVA is performed using MS Excel Software

H₀₁: The Cash-deposit ratios of sample public sector banks i.e Andhra Bank(AB), Canara Bank(CAN),Central Bank(CB),Punjab National Bank(PNB) & State Bank of India(SBI) do not differ significantly.

Inference: $F_{cal} < F_{crit}$. We accept H_{01} and conclude that the average Cash Deposit Ratios of the sample public sector banks do not differ significantly.

Table 3: Cash Deposit Ratios of sample Private sector banks

YEAR	AX	ICICI	HDFC	IINB	YES	MEAN
2006	6.05	5.41	5.92	4.02	3.02	4.884
2007	7.92	8.11	7.43	5.78	4.74	6.796
2008	8.33	12.01	12.45	8.01	7.22	9.604
2009	8.02	8.03	9.47	5.38	7.9	7.76

YEAR	AX	ICICI	HDFC	IINB	YES	MEAN
2010	6.71	13.61	9.24	7.85	7.44	8.97
2011	7.33	9.26	12.03	7.14	6.69	8.49
2012	4.86	8.01	6.07	6.85	4.74	6.106
2013	5.85	6.51	4.93	6	4.98	5.654
2014	6.06	6.57	6.89	7.29	6.12	6.586
2015	6.14	7.09	6.1	5.44	5.74	6.102
MEAN	6.727	8.461	8.053	6.376	5.859	7.0952

Source: RBI Statistical tables

Table 3 explains the Cash Deposit Ratio of sample Private sector banks. Cash Deposit Ratio of the selected private sector banks varied between the highest of 9.604 times in 2008 and the lowest of 4.884 times in 2006 with ten years average of 7.0952 times. The mean cash deposit of ICICI Bank(8.461times) is highest and that of the Yes bank (5.859 times) is least among other private sector banks . The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of the samples taken in the H₀₂. The results were shown in the Table 4.

Table 4: ANOVA results for the average cash deposit ratios of the sample private sector banks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	49.60669	4	12.40167	3.324406	0.018103	2.578739
Within Groups	167.8722	45	3.730493			
Total	217.4789	49				

Source: ANOVA is performed using MS Excel

H₀₂: The Cash-deposit ratios of sample private sector banks i.e Axis Bank(AX),ICICI Bank(ICICI),HDFC Bank(HDFC),IndusInd Bank(IINB) & YES Bank(YES)do not differ significantly.

Inference: $F_{cal} > F_{crit}$. We reject H₀₂ and conclude that the average Cash-deposit ratios of the sample private sector banks differ significantly.

Comparison of means of Cash Deposit ratios of sample Public sector and Private sector banks:

Table 5 :Means of cash deposit ratios of sample public sector and private sector banks

Year	Public Sector Banks	Private Sector Banks
2006	9.692	4.884
2007	7.122	6.796
2008	9.554	9.604
2009	7.51	7.76
2010	8.154	8.97
2011	8.166	8.49
2012	5.484	6.106
2013	5.04	5.654
2014	5.36	6.586
2015	5.432	6.102

Source: Table 1 and Table 3

Table 6: Two – Sample t-test assuming unequal variances of the means of cash deposit ratios of sample public and private sector banks

	Public Sector Banks	Private Sector Banks
Mean	7.1514	7.0952
Variance	3.088321822	2.386289956
df	18	
t Stat	0.075955574	
P(T<=t) two-tail	0.940292297	
t Critical two-tail	2.100922037	

Source: Table 5, t-test performed using MS-Excel

H0₃: The mean Cash-deposit ratios of sample public and private sector banks do not differ significantly.

Inference: $t_{cal} < t_{crit}$. We accept H0₃ and conclude that the Means of Cash-deposit ratios of sample public sector and private sector banks not differ significantly

Business per Employee:

Table 7: Business per employee of sample public sector banks

Rs in million

Year	AB	CAN	CB	PNB	SBI	Mean
2006	42.67	44.15	24.04	33.09	29.92	34.77
2007	53.60	54.87	30.38	40.74	35.7	43.06
2008	62.65	60.94	40.09	50.45	45.6	51.94
2009	72.82	78.01	56.02	65.49	55.6	65.59
2010	93.9	98.25	71.17	80.79	63.6	81.54
2011	116.5	119.91	83.51	101.78	70.46	98.43
2012	126.2	137.43	86.15	113.19	79.84	108.56
2013	135.5	142.01	106.73	116.50	94.38	119.03
2014	134.7	143.83	102.54	128.3	106.37	123.15
2015	153.6	143.50	113.77	131.9	123.4	133.23
MEAN	99.21	102.29	71.44	86.22	70.48	85.93

Source: RBI Statistical tables

Table 7 explains the Business per employee of sample Public sector banks. Among the selected public sector banks business per employee is highest in 2015 i.e Rs133.23 million and least in the year 2006 i.e Rs 34.77 million. There is an increase in business per employee year by year in the 10 years of study. The mean stood at Rs 85.93 million for 10 ten years in the sample banks. The mean Business per employee of Canara Bank is highest(Rs 102.29 million) and that of the State Bank of India is least (Rs 70.48 million)among other public sector banks . The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of the samples taken in the H0₄. The results were shown in the Table 8.

Table 8: ANOVA results for the average business per employee of the sample public sector banks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	8926.179	4	2231.545	1.708556	0.164749	2.578739
Within Groups	58774.48	45	1306.1			
Total	67700.66	49				

Source: ANOVA is performed using MS Excel

H0₄: The average business per employee of sample public sector banks i.e Andhra Bank(AB), Canara Bank(CAN),Central Bank(CB),Punjab National Bank(PNB) & State Bank of India(SBI) do not differ significantly.

Inference: $F_{cal} < F_{crit}$. We accept H_{04} and conclude that the average business per employee of the sample public sector banks do not differ significantly.

Table 9: Business per employee of sample private sector banks

Rs in million

Year	AX	ICICI	HDFC	IINB	YES	Mean
2006	102	90.5	75.8	88.018	84.80	88.22
2007	102.4	102.7	60.7	103.97	53.05	84.56
2008	111.7	100.8	50.6	106.26	68.31	87.53
2009	106	115.4	44.6	83.6	98.83	89.68
2010	111.1	76.5	59	83.74	162.38	98.54
2011	136.6	73.5	65.3	84.39	222.02	116.36
2012	127.6	70.8	65.4	78.84	174.76	103.48
2013	121.5	73.5	75	84.05	177.41	106.29
2014	123	74.7	89	71.71	155.81	102.84
2015	137.1	83.2	101	71.92	168.6	112.36
MEAN	117.9	86.16	68.64	85.65	136.60	98.99

Source: RBI Statistical tables

Table 9 explains the Business per employee of sample Private sector banks. Among the selected Private sector banks business per employee is highest in 2011 i.e Rs116.36 million and least in the year 2006 i.e Rs 88.22 million. There is an increase in business per employee upto 2011 and started to fluctuate from 2012 onwards. The mean stood at Rs 98.99million for 10 ten years in the sample banks. The mean Business per employee of Yes bank is highest(Rs 136.60 million) and Axis Bank is observed as Rs117.9 million and that of the HDFC Banks is least (Rs 68.64 million)among other private sector banks . The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of the samples taken in the H_{05} . The results were shown in the Table 10.

Table 10: ANOVA results for the average business per employee of the sample private sector banks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	30357.62	4	7589.404	9.541165	1.13E-05	2.578739
Within Groups	35794.7	45	795.4378			
Total	66152.32	49				

Source: ANOVA is performed using MS Excel

H_{05} : The average business per employee of sample private sector banks i.e Axis Bank (AX), ICICI Bank (ICICI), HDFC Bank (HDFC), Indus Ind Bank (IINB) & Yes Bank (YES) do not differ significantly.

Inference: $F_{cal} > F_{crit}$. We reject H_{05} and conclude that the average business per employee of the sample private sector banks differ significantly.

Comparison of means of business per employee(Rs in million) of sample Public sector and Private sector banks.

Table 11 :Means of business per employee(Rs in million) of sample public sector and private sector banks

Year	Public Sector Banks	Private Sector Banks
2006	34.7786	88.2252
2007	43.0616	84.5654
2008	51.949	87.5358
2009	65.5932	89.6872
2010	81.5458	98.546
2011	98.435	116.3646
2012	108.5666	103.4814
2013	119.0302	106.2942
2014	123.1522	102.8444
2015	133.2352	112.3646

Source: Table 7 and Table 9

Table 12: Two-sample t-test assuming unequal variances of Means of business per employee (Rs in million) of sample public and private sector banks

Variables	Public Sector Banks	Private Sector Banks
Mean	85.93474	98.99088
Variance	1269.929807	123.4472199
df	11	
t Stat	-1.106064556	
P(T<=t) two-tail	0.292301744	
t Critical two-tail	2.200985159	
Source: Table 11, t-test performed using MS-Excel		

H0₆: The mean business per employee (Rs in million) of sample public and private sector banks do not differ significantly.

Inference: $t_{cal} < t_{crit}$. We accept H0₆ and conclude that Means of business per employee (Rs in million) of sample public sector and private sector banks do not differ significantly.

Profit per Employee:

Table 13: Profit per employee of sample Public sector banks

Year	Rs in million					
	AB	CAN	CB	PNB	SBI	Mean
2006	0.369	0.302	0.068	0.248	0.217	0.240
2007	0.414	0.324	0.135	0.268	0.237	0.275
2008	0.43	0.365	0.156	0.366	0.373	0.338
2009	0.458	0.497	0.171	0.564	0.474	0.432
2010	0.7	0.735	0.33	0.731	0.446	0.588
2011	0.9	0.976	0.396	0.835	0.385	0.698
2012	0.9	0.821	0.151	0.842	0.531	0.649
2013	0.9	0.7	0.273	0.805	0.645	0.664
2014	0.2	0.5	-0.311	0.5	0.485	0.274
2015	0.3	0.5	0.153	0.5	0.602	0.411
Mean	0.557	0.572	0.152	0.565	0.439	0.457
Source: RBI Statistical tables						

Table 11 explains the Profit per employee of sample public sector banks. Among the selected public sector banks Profit per employee is highest in 2011 i.e Rs0.698 million and least in the year 2006 i.e Rs 0.240 million. There is an increase in profit per employee upto 2011 and started to decline from 2012 to 2014 and raised further in the year 2014. The mean stood at Rs 0.457 million for 10 ten years in the sample banks. The mean Profit per employee of Canara Bank is highest (Rs 0.572 million) and Andhra Bank is observed as Rs0.557 million and that of the Canara Bank is least (Rs 0.152 million) among other public sector banks. The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of the samples taken in the H0₇. The results were shown in the Table 14.

Table 14: ANOVA results for the average profit per employee of the sample public sector banks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.283129	4	0.320782	6.914307	0.000199	2.578739
Within Groups	2.08773	45	0.046394			
Total	3.370859	49				
Source: ANOVA is performed using MS Excel						

H0₇: The average profit per employee of sample public sector banks i.e Andhra Bank (AB), Canara Bank(CAN),Central Bank(CB),Punjab National Bank(PNB)&State Bank of India(SBI) do not differ significantly.

Inference: $F_{cal} > F_{crit}$. We reject H0₇ and conclude that the average profit per employee of the sample public sector banks differ significantly.

Table 15: Profit per employee of sample Private sector banks

Rs in million						
YEAR	AX	ICICI	HDFC	IINB	YES	MEAN
2006	0.869	1	0.739	0.156	0.882	0.729
2007	0.759	0.9	0.613	0.261	0.386	0.583
2008	0.839	1	0.497	0.262	0.635	0.646
2009	1	1.1	0.418	0.349	1.138	0.80
2010	1.2	0.9	0.598	0.651	1.675	1.004
2011	1.4	1	0.737	0.824	2.089	1.21
2012	1.4	1.1	0.8	0.857	2.042	1.239
2013	1.5	1.4	1	0.922	2.102	1.384
2014	1.5	1.4	1.2	0.903	2.045	1.409
2015	1.7	1.6	1	0.938	2.096	1.466
MEAN	1.2167	1.14	0.7602	0.6123	1.509	1.0476

Source: RBI Statistical tables

Table 15 explains the Profit per employee of sample private sector banks. Among the selected private sector banks Profit per employee is highest in 2015 i.e Rs1.466 million and least in the year 2007 i.e Rs 0.583 million. There is a continuous increase in profit per employee in the period of study. The mean stood at Rs 1.0476 million for 10 ten years in the sample banks. The mean Profit per employee of Yes Bank is highest (Rs 1.509 million) and that of the IndusInd Bank is least (Rs 0.6123 million) among other private sector banks. The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of the samples taken in the H0₈. The results were shown in the Table 16.

Table 16: ANOVA results for the average profit per employee of the sample private sector banks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	5.221074	4	1.305268	8.209676	4.63717E-05	2.578739
Within Groups	7.154616	45	0.158991			
Total	12.37569	49				

Source: ANOVA is performed using MS Excel

H0₈: The average profit per employee of sample private sector banks i.e Axis Bank (AX), ICICI Bank (ICICI), HDFC Bank (HDFC), Indus Ind Bank (IINB) & Yes Bank (YES) do not differ significantly.

Inference: $F_{cal} > F_{crit}$. We reject H0₈ and conclude that the average profit per employee of the sample private sector banks differ significantly.

Comparison of means of profit per employee (Rs in million) of sample Public sector and Private sector banks.

Table 17 : Means of profit per employee (Rs in million) of sample public sector and private sector banks

Year	Public Sector Banks	Private Sector Banks
2006	0.2408	0.7292
2007	0.2756	0.5838
2008	0.338	0.6466
2009	0.4328	0.801
2010	0.5884	1.0048

Year	Public Sector Banks	Private Sector Banks
2011	0.6984	1.21
2012	0.649	1.2398
2013	0.6646	1.3848
2014	0.2748	1.4096
2015	0.411	1.4668

Source: Table 13 and Table 15

Table 18: Two-sample t-test assuming unequal variances of Means of profit per Employee (Rs in million) of sample public sector and private sector banks

Variables	Public Sector Banks	Private Sector Banks
Mean	0.45734	1.04764
Variance	0.031689823	0.113747163
Observations	10	10
df	14	
t Stat	-4.894804508	
P(T<=t) two-tail	0.000236581	
t Critical two-tail	2.144786681	

Source: Table 17, t-test performed using MS-Excel

H₀: The mean profit per employee (Rs in million) of sample public and private sector banks do not differ significantly.

Inference: $t_{cal} < t_{crit}$. We accept H₀, and conclude that Means of profit per employee(Rs in million) of sample public sector and private sector banks do not differ significantly.

CONCLUSION:

The Managerial efficiency of selected banks is analysed by considering the variables like Cash deposit ratio, Business per employee, Profit per employee for the period of ten years i.e from 2005-2006 to 2014-15. The statistical significance of the data is verified through One way ANOVA and Independent t-test assuming unequal variance.

The study indicates that there are no significant differences in the of cash deposit ratios and business per employee but there exists significant difference in the profit per person among the selected public sector banks in the period of study. The study indicates that there are no significant differences in the of cash deposit ratios, business per employee, profit per person among the selected private sector banks in the period of study.

However it is also observed that are no significant difference between the means of cash deposit ratios, business per employee, profit per person in the comparative study between the selected public sector banks and private sector banks in the period of study.

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