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Productivity Analysis Of Scheduled Commercial Banks During Pre And Post Sub Prime Crisis

Chetana M. Soni
Dr. Ambedkar Institute of Management Studies and Research, Nagpur
Email id: - chetana.soni21@gmail.com

Dr. Vivek U. Pimplapure
Dr. Ambedkar Institute of Management Studies and Research, Nagpur
Email id: - vivekpimplapure@gmail.com

ABSTRACT: - The present study analyzes the productivity of Indian Commercial Banks for the study period 2003-04 to 2014-15. The paper is trying to quantify the productivity changes during pre-subprime banks is perform to observe the effect of crisis. Researcher has selected sample of 10 public sector banks and 8 private sector banks for the study. For the study purpose ratio analysis, average, Correlation as a statistical tool is used. For the hypothesis testing F-Test is used. The result indicates that private sectors perform better during post subprime crisis compare to Public sector Banks.

Keywords: - Indian Banks, Productivity, Pre subprime and Post Subprime crisis

1. Introduction

Status of the economic is determined by its financial system. In the any country economy, the banking sector plays a key role in contributing the growth of it. Banking growth speed up financial system surely and contribute more in the development of any nation. As per the many research it was fund that countries whose banks are sound that country develop faster than other. Over a period of time Indian banking system has underwent through liberalization, privatization and globalization policy and it leads to structural changes in Indian Baking sector. Indian Banking system underwent through many technological changes like mobile banking, ATM, debit card, credit card, internet banking, tele- banking and 24 by 7 hour banking.

The above research is focusing on detail analysis of Indian commericial banks in the period for the 2003-04 to 2013-14 of selected public and private sector banks. Beside this analysis of bank

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at disaggregate level we are doing for gaining more insight in the efficiency and productivity analysis.

2. Review of Literature

Numbers of research has been done to measure the productivity growth of banking sector. Following are the some of the brief about the relevant research on this topic.

Singh and Malhotra (2017) in their research paper entitle, "Productivity growth of Indian Commercial Banking : A Data Envelopment Analysis (DEA) Approach" applied DEA malmquist productive index and compute the factor productivity growth for the period 2001 to 2011. The research indicates that nationalized banks perform better than their more liberalized counterpart under private and foregin ownership. Foreign banks found more technically efficient group recorded an efficient growth of 0.6 percent for the study.

Heffernan and Fu(2009) in their research studied the trends in total factor productivity changes of banking industry of India and china for the period 2000 to 2007. It was found that growth was largely driven by technological progress and innovation. China Growth was outpace India during the study period.

Kouser and saba (2011) studied the impact of merger and acquisition. It studied the effect of merger on profitability of bank by using six different financial ratio. The sample size was 10 sample size in pakisan for the period 1999-2010. It shows that operating financial ratio present downward trend and conclude that merger and acquisition not always leads to positive impact and its varies with contextual factor.

Bhattacharya, Lovell and Sahay(1997) in their study measured the productivity efficiency of Indian commercial banks during the period 1986-91. The research used DEA analysis technique for studied purpose. Interest expenses and Operating expenses were taken as input variables and in output variable Investment, advances and deposits were taken as output variables.

Mohan and Ray (2004) in his research made an attempt to compare public sector banks with private sector banks on the measure of productivity. Malmquist of total factor productivity Growth is consider as measure and duration is consider for the period 1992-2000. It has been

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concluded on the basis of study that it is difficult to sustain the proposition that efficiency and productivity have been lower in public sector banks compare to private sector banks.

Ray (2012) in his research evaluate the impact of liberalization on productivity and efficiency of Indian Banks. As per the study there is increase in productivity of all banks i.e Public, Private and Foreign Banks. It used DEA Malquist Productivity Index to measure total productivity index for the period 1992-2009.

Madhangopal & Chandrasekaran (2014) studied the relationship between global financial crisis and Productivity growth of Indian Banking sector using malmquist Index (DEA-MI) for the period 2005 to 2012. They are divided into Pre- Crisis,Crisis and post crisis. The result shows that technological progression in Indian banking sector is declined due to the recent financial crisis. Financial crisis of 2007-09 much not affect the Indian Financial system. The result of post crisis reveled that technology improvement slowly started again to influence in productive progress.

3. Research Objectives

- To analyses the Productivity efficiency of Public and Private sector Bank for the period 2003-04 to 2014-15.
- To compare the public and private sector bank performance on the basis of per employee and per branch during pre- subprime crisis and post subprime crisis.
- To analyses whether crisis really affect the productivity performance of scheduled commercial banks in India.

4. Research Methodology

Productivity performance over the year can be investigated with the help of quantitative research approach. Quantitative research approach is relevant as it employed statistics which is comparatively methodological discipline that used mathematics idea for descriptive data analysis, point inference and descriptive research hypothesis testing.

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Source of data Collection

The data required for the study is collected from secondary source. Annual reports of the banks, data from reserve bank of India publication, books, websites and journal are the main source of data for the present study.

Sample of the Study

With respect to sample size the study employed 10 Public Sector Banks and 8 Private Sector Banks. The selection of sample size is based on the convenient sample size technique. Population of public sector banks includes Bank of Baroda, Bank of India, Bank of Maharashtra, Canara Bank, Indian Bank, Punjab National Bank, Union Bank of India and State Bank of India, Central Bank of India and IDBI on the other hand private sector bank population includes HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra , IndusInd Bank, City Union Bank, Federal Bank and Karur Vyas Bank.

5. Data Processing, Analysis, Interpretation and hypothesis testing

The study is mainly based on the secondary data. The data duration is 15 years (From 2003-04 to 2017-18) The data for the present study is presented in tabular form. Statistics measures such as mean, ratio analysis and F test is used for the study purpose.

Table No. 1 Public Sector Banks Employees Productivity Indicators (Cr)

Year	DPE	APE	BPE	NPPE
2003-04	3.23	2.27	5.57	2.78
2004-05	2.34	2.81	5.24	2.32
2005-06	2.48	2.44	5.06	3.00
2006-07	2.91	2.50	5.61	3.24
2007-08	3.82	3.18	7.22	4.30
2008-09	4.73	3.71	8.75	5.43
2009-10	5.66	4.38	10.47	6.19
2010-11	6.37	5.18	12.12	7.43
2011-12	6.90	9.37	16.92	7.34

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2012-13	7.80	6.44	14.95	7.40
2013-14	9.96	6.62	18.37	4.79
2014-15	8.99	7.00	16.76	5.62
2015-16	8.89	6.54	15.237	-2.48
2016-17	9.53	6.39	17.236	-4.73
2017-18	10.34	7.06	17.567	-11.71
Source :- Secondary Data **DPE :- Deposit Per Employee, APE:- Advances Per employee, BPE- Business Per Employee and NPPE :- Net Profit Per Employee.**				

Table No. 2 Private Sector Banks Employees Productivity Indicators (Cr)

Year	**DPE**	**APE**	**BPE**	**NPPE**
2003-04	4.13	2.67	6.80	8.32
2004-05	3.88	2.72	6.59	6.46
2005-06	3.99	2.83	6.82	5.44
2006-07	4.17	3.05	7.22	5.20
2007-08	4.12	3.11	7.24	5.74
2008-09	3.88	2.96	6.84	6.19
2009-10	4.37	3.35	7.72	7.92
2010-11	4.62	3.68	8.31	8.96
2011-12	4.76	3.96	8.72	9.56
2012-13	5.01	4.19	9.21	10.55
2013-14	5.49	4.35	9.84	9.84
2014-15	5.98	4.52	10.50	11.33
2015-16	6.09	5.25	11.005	10.28
2016-17	7.17	5.52	11.85	10.09
2017-18	6.97	6.08	13.04	9.20
Source :- Secondary Data **DPE:- Deposit Per Employee, APE:- Advances Per employee, BPE- Business Per Employee and NPPE :- Net Profit Per Employee.**				

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Table No. 3 Public Sector Banks Branch Productivity Indicators (Cr)

Year	DPB	APB	BPB	NPPB
2003-04	54.73	85.07	138.77	68.87
2004-05	67.77	138.71	205.11	70.64
2005-06	45.22	50.70	94.28	59.18
2006-07	45.70	39.52	83.28	48.11
2007-08	57.24	47.04	102.79	60.80
2008-09	72.95	57.58	127.95	77.15
2009-10	78.18	101.71	135.06	76.32
2010-11	83.52	64.87	146.47	88.38
2011-12	86.00	68.01	204.14	84.30
2012-13	91.18	72.03	160.38	79.73
2013-14	92.82	69.30	159.15	45.94
2014-15	92.89	69.17	159.05	53.54
2015-16	81.64	67.46	149.102	-35.22
2016-17	86.10	64.32	150.42	-43.36
2017-18	88.50	57.94	146.65	-94.22

Source :- Secondary Data

DPE :- Deposit Per Branch, APE:- Advances Per Branch, BPE- Business Per Branch and NPPE :- Net Profit Per Branch.

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Table No. 4 Private Sector Banks Branch Productivity Indicators (Cr)

Year	DPB	APB	BPB	NPPB
2003-04	92.33	61.63	153.96	193.71
2004-05	82.24	61.73	143.97	148.66
2005-06	97.82	74.39	172.22	147.18
2006-07	105.39	81.07	186.46	138.36
2007-08	98.99	76.04	175.04	151.20
2008-09	94.49	73.81	168.30	155.30
2009-10	89.12	69.12	158.24	169.61
2010-11	85.24	69.30	154.54	172.96
2011-12	85.79	73.23	159.01	186.41
2012-13	87.11	73.99	161.10	194.88
2013-14	86.28	68.65	154.92	163.37
2014-15	88.15	66.22	154.37	175.67
2015-16	95.52	76.92	170.71	170.87
2016-17	93.14	83.99	183.88	169.15
2017-18	91.37	83.21	203.72	159.55

Source :- Secondary Data

DPE :- Deposit Per Branch, APE:- Advances Per Branch, BPE- Business Per Branch and NPPE :- Net Profit Per Branch.

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Table No. 5 Position of Public Sector Banks and Private Sector Banks during Presubprime and Postsubprime Crisis Period.

	Public Sector Banks			Private Sector Banks		
	Pre Sub Prime Crisis Period	**Post Sub Prime Crisis Period**	**Improve/Not improved**	**Pre Sub Prime Crisis Period**	**Post Sub Prime Crisis Period**	**Improve/Not improved**
DPB(Cr)	57.27	86.76	**Improve**	95.21	89.08	Not Improved
APB(Cr)	69.77	70.54	**Improve**	71.45	73.85	**Improve**
BPB(Cr)	127.04	157.30	**Improve**	166.66	166.72	**Improve**
NPB(Cr)	64.12	28.38	Not Improved	155.73	173.61	**Improve**
DPE(Cr)	3.25	8.27	**Improve**	4.03	5.61	**Improve**
APE(Cr)	2.82	6.55	**Improve**	2.89	4.54	**Improve**
BPE(Cr)	6.24	15.52	**Improve**	6.92	10.02	**Improve**
NPPE(CR)	3.51	2.21	Not Improved	6.23	9.75	**Improve**
Note –DPB- Deposit Per Branch, APB- Advanced Per Branch, BPB- Business Per Branch, NPB- Net Profit Per Branch, DPE- Deposits Per Employee, APE- Advanced Per employee, BPE- Business Per Employee and NPPE – Net Profit Per Employee						

Source :- Calculated from Secondary Data

Table No. 6 Ranking of Scheduled Commercial Bank on the basis of productivity Parameters

Ranks	**DPB**	**APB**	**BPB**	**NPB**	**DPE**	**APE**	**BPE**	**NPPE**
	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr
1st Rank	IDBI	IDBI	IDBI	ICICI	IDBI	IDBI	IDBI	ICICI
2nd Rank	ICICI	ICICI	ICICI	HDFC	BOB	SBI	BOB	AXIS
3rd Rank	Axis	Axis	Axis	Kotak	Axis	ICICI	SBI	HDFC
4th Rank	IndusInd	Kotak	HDFC	Axis	Union	BOB	BOI	IndusInd
5th Rank	HDFC	HDFC	IndusInd	IndusInd	BOI	Axis	Axis	Kotak
6th Rank	Kotak	SBI	Kotak	IDBI	SBI	Union Bank	Union Bank	City Union
7th Rank	SBI	IndusInd	SBI	Karur	ICICI	BOI	ICICI	Kotak
8th Rank	Canara	BOB	BOB	City Union	BOM	IndusInd	Canara	Federal
9th Rank	BOB	BOI	Canara	Federal	Indian	Canara	BOM	Indian Bank
10th Rank	BOI	Canara	BOI	SBI	IndusInd	BOM	IndusInd	BOB
11th Rank	Union	Union Bank	Union	Indian	Punjab	Indian	Indian	SBI

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	Bank			Bank				
12th Rank	Karur Vyas	Central Bank	Karur	Canara Bank	Federal	Federal	PNB	Union Bank
13th Rank	Federal	Karur Vyas	PNB	BOB	HDFC	HDFC	Federal	Canara
14th Rank	PNB	Federal Bank	Central	Union Bank	Karur	Karur Vyas	Karur Vyas	BOI
15th Rank	Indian Bank	PNB	Federal	PNB	Central	PNB	HDFC	PNB
16th Rank	Central	Indian Bank	IndianBank	BOI	City Union	City Union	Central Bank	HDFC
17th Rank	BOM	BOM	BOM	BOM	Kotak	Central Bank	City Union	BOM
18th Rank	City Union	City Union	City Union	Central	Canara	Kotak	Kotak	Central

Table No. 7 Correlation Matrix of Branch Productivity Indicators Pre sub Prime Crisis of scheduled commercial banks in India

Productivity Indicators Pre sub Prime Crisis	***DPB***	***APB***	***BPB***
DPB	1		
APB	-0.16149	1	
BPB	0.119357	0.960545	1

Source :- Calculated from Secondary Data

Table No. 8 Correlation Matrix of Branch Productivity Indicators Post sub Prime Crisis of scheduled commercial banks in India

Productivity Indicators Post sub Prime Crisis	***DPB***	***APB***	***BPB***
DPB	1		
APB	-0.45046	1	
BPB	0.245955	0.54462	1

Source :- Calculated from Secondary Data

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Table No. 9 Correlation Matrix of Employee Productivity Indicators Pre sub Prime Crisis of scheduled commercial banks in India

Productivity Indicators Pre sub Prime Crisis	*DPE*	*APE*	*BPE*
DPE	1		
APE	0.745861	1	
BPE	0.950062	0.916031	1

Source :- Calculated from Secondary Data

Table No. 10 Correlation Matrix of Employee Productivity Indicators Post sub Prime Crisis of scheduled commercial banks in India

Productivity Indicators Post sub Prime Crisis	*DPE*	*APE*	*BPE*
DPE	1		
APE	0.66161	1	
BPE	0.935573	0.859361	1

Source :- Calculated from Secondary Data

6. Hypothesis For The Study

1. There is no significant difference in variation of Business per employee of banks during pre subprime crisis and post subprime crisis.
2. There is no significant difference in variation of Net Profit per Branch of banks during pre subprime crisis and post subprime crisis.
3. There is no significant in variation of Deposit per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis
4. There is no significant in variation of Advances per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis

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5. There is no significant in variation of Net profit per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis
6. There is no significant in variation of Deposits Per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis
7. There is no significant in variation of Average Business Per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis
8. There is no significant in variation of Average Advances Per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis

1. There is no significant difference in variation of Business per employee of banks during pre subprime crisis and post subprime crisis

Here, it has been assumed that Business Per Employee of both public sector banks and private sector banks do not have any significant variation during the pre and post subprime crisis phases. Thus, we can say that variation in Business Per Employee of banks is equal during pre subprime crisis and post subprime crisis phases. To test this hypothesis, f – test is used.

Table No. 11: Business per employee of banks before Sub Prime Crisis and after Subprime Crisis

Business per Employee before subprime crisis	Business per Employee after subprime crisis
6.19	9.10
5.92	10.21
5.94	12.82
6.41	12.08
7.23	14.10
7.79	13.63
	13.12
	14.54
	15.31

Source: - Calculated from Secondary Data

Table No. 12 F Test on Business per employee of banks before Sub Prime Crisis and after Subprime Crisis

Particulars	*Business per Employee before subprime crisis*	*Business per Employee after subprime crisis*
Mean	6.58083333	12.7685
Variance	0.5821321	4.088847512

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Observations	6	9
Df	5	8
F	0.142450204	
P(F<=f) one-tail	0.023056978	
F Critical one-tail	0.207541238	

Source: - Calculated from Secondary Data

Value of F after applying a formula is 7.02, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is higher than the tabulated value (As well as P calculated value 0.02302961 is less than 0.05), thus we will **reject the null hypothesis** and can say that **there is significant difference in variation of Business per Employee of banks during pre subprime crisis and post subprime crisis.**

2. There is no significant difference in variation of Net Profit per Branch of banks during pre subprime crisis and post subprime crisis

Here, it has been assumed that Net Profit per Branch of both public sector banks and private sector banks do not have any significant variation during the pre and post subprime crisis phases. Thus, we can say that variation in Net Profit per Branch of banks is equal during pre subprime crisis and post subprime crisis phases. To test this hypothesis, f – test is used.

Table No. 13 : Net Profit per Branch before Sub Prime Crisis and after Subprime Crisis

Net Profit per Branch before subprime crisis	Net Profit per Branch after subprime crisis
131.29	122.96
109.65	130.67
103.18	135.36
93.23	137.30
106.00	104.65
116.23	114.60
	67.83
	62.89
	32.67

Source: - Calculated from Secondary Data

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Table No. 14: F Test on Net Profit per branch of banks before Sub Prime Crisis and after Subprime Crisis

Particulars	***Net Profit per Branch before subprime crisis***	***Net Profit per Branch after subprime crisis***
Mean	109.9286	100.9933
Variance	167.1254	1410.255
Observations	6	9
Df	5	8
F	0.118561762	
P(F<=f) one-tail	0.01552079	
F Critical one-tail	0.207541238	

Source: - Calculated from Secondary Data

Value of F after applying a formula is 8.44, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is higher than the tabulated value (As well as P calculated value 0.015505 is less than 0.05), thus we will **reject the null hypothesis** and can say that **there is significant difference in variation of Net Profit per branch of banks during pre subprime crisis and post subprime crisis.**

3. There is no significant in variation of Deposit per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis

Table No. 15 : Business Per Employee before Sub Prime Crisis and after Subprime Crisis

Deposit Per Employee Before Sub Prime Crisis	Deposit Per Employee After Sub Prime Crisis
3.68	5.015
3.11	5.495
3.235	5.83
3.54	6.405
3.97	7.725
4.305	7.485
	7.49
	8.35
	8.655

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Table No. 16: F Test on Business Per Employee of banks before Sub Prime Crisis and after Subprime Crisis

Particulars	Deposit Per Employee Before Sub Prime Crisis	Deposit Per Employee After Sub Prime Crisis
Mean	3.64	6.938889
Variance	0.20153	1.68213
Observations	6	9
Df	5	8
F	0.119806446	
P(F<=f) one-tail	0.015878641	
F Critical one-tail	0.207541238	

Value of F after applying a formula is 8.34, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is higher than the tabulated value (As well as P calculated value 0.015878641 is less than 0.05), thus we will **reject the null hypothesis** and can say that **there is significant difference in variation of Deposits per Employee of banks during pre subprime crisis and post subprime crisis.**

4. There is no significant in variation of Advances per employees of banks during Pre Subprime Crisis and Post Sub Prime Crisis

Table No. 17 Advances Per Employee before Sub Prime Crisis and after Subprime Crisis

Advances Per Employee Before Sub Prime Crisis	Advances Per Employee After Sub Prime Crisis
2.47	3.865
2.765	4.43
2.635	6.665
2.775	5.315
3.145	5.485
3.335	5.76
	5.895
	5.955
	6.57

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Table No. 18 F Test on Advances Per Employee of banks before Sub Prime Crisis and after Subprime Crisis

Particulars	*Advances Per Employee Before Sub Prime Crisis*	*Advances Per Employee After Sub Prime Crisis*
Mean	2.854166667	5.548888889
Variance	0.105124167	0.845479861
Observations	6	9
Df	5	8
F	0.124336689	
P(F<=f) one-tail	0.017214046	
F Critical one-tail	0.207541238	

Value of F after applying a formula is 8.04, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is higher than the tabulated value (As well as P calculated value 0.017214046is less than 0.05), thus we will **reject the null hypothesis** and can say that **there is significant difference in variation of Advances per Employee of banks during pre subprime crisis and post subprime crisis.**

5. There is no significant in variation of Net profit per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis

Table No. 19 Net Profit Per Employee before Sub Prime Crisis and after Subprime Crisis

Net Profit Per Employee Before Sub Prime Crisis	Net Profit Per Employee After Sub Prime Crisis
5.55	7.055
4.39	8.195
4.22	8.45
4.22	8.975
5.02	7.315
5.81	8.475
	3.9
	2.68
	-1.255

Table No. 20 F Test on Net profit Per Employee of banks before Sub Prime Crisis and after Subprime Crisis

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Particulars	Net Profit Per Employee Before Sub Prime Crisis	Net Profit Per Employee After Sub Prime Crisis
Mean	4.868333333	5.976666667
Variance	0.488776667	12.08769375
Observations	6	9
Df	5	8
F	0.040435891	
P(F<=f) one-tail	0.001305884	
F Critical one-tail	0.207541238	

Value of F after applying a formula is 24.07, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is higher than the tabulated value (As well as P calculated value 0.040435891 is less than 0.05), thus we will **reject the null hypothesis** and can say that **there is significant difference in variation of Net Profit per Employee of banks during pre subprime crisis and post subprime crisis.**

6. **There is no significant in variation of Deposits Per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis**

Table No. 21 Deposits Per Branch before Sub Prime Crisis and after Subprime Crisis

Net Profit Per Branch Before Sub Prime Crisis	Net Profit Per Branch After Sub Prime Crisis
73.53	83.65
75.005	84.38
71.52	85.895
75.545	89.145
78.115	89.55
83.72	90.52
	88.58
	89.62
	89.935

Table No. 22 F Test on Net profit Per Branch of banks before Sub Prime Crisis and after Subprime Crisis

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Particulars	Net Profit Per Branch Before Sub Prime Crisis	Net Profit Per Branch After Sub Prime Crisis
Mean	76.23916667	87.91944444
Variance	18.21935417	6.646059028
Observations	6	9
Df	5	8
F	2.741377121	
P(F<=f) one-tail	0.098842721	
F Critical one-tail	3.687498666	

Value of F after applying a formula is 0.36, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is lower than the tabulated value (As well as P calculated value 0.098842721is higher than 0.05), thus we will **accept the null hypothesis** and can say that **there is significant difference in variation of Deposit Per branch of banks during pre subprime crisis and post subprime crisis.**

7. **There is no significant in variation of Average Business Per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis**

Table No. 23 Average Business Per Branch before Sub Prime Crisis and after Subprime Crisis

Average Business Per Branch Before Sub Prime Crisis	Average Business Per Branch After Sub Prime Crisis
146.365	146.65
174.54	150.505
133.25	181.575
134.87	160.74
138.915	157.035
148.125	156.71
	159.906
	167.15
	175.185

Table No. 24 F Test on Average Business Per Branch of banks before Sub Prime Crisis and after Subprime Crisis

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Particulars	Average Business Per Branch Before Sub Prime Crisis	Average Business Per Branch After Sub Prime Crisis
Mean	146.0108333	161.7173333
Variance	231.1632742	126.1491915
Observations	6	9
Df	5	8
F	1.832459419	
P(F<=f) one-tail	0.212703281	
F Critical one-tail	3.687498666	

Value of F after applying a formula is 0.54, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is lower than the tabulated value (As well as P calculated value 0.212703281is higher than 0.05), thus we will **accept the null hypothesis** and can say that **there is significant difference in variation of Average Business Per branch of banks during pre subprime crisis and post subprime crisis.**

Table No 25 There is no significant in variation of Advances per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis

Advances Per Branch before subprime crisis	**Advances Per Branch after subprime crisis**
73.35	85.415
100.22	67.085
62.545	70.62
60.295	73.01
61.54	68.975
65.695	67.695
	72.19
	74.155
	70.575

Table No. 26 F Test on Average Advances Per Branch of banks before Sub Prime Crisis and after Subprime Crisis

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Particulars	Advances Per Branch before subprime crisis	Advances Per Branch after subprime crisis
Mean	70.6075	72.19111111
Variance	232.4250475	30.13870486
Observations	6	9
df	5	8
F	7.7118459	
P(F<=f) one-tail	0.006303033	
F Critical one-tail	3.687498666	

Value of F after applying a formula is 0.54, whereas tabulated value of F at d.f. 8 and 5 is 3.69, the calculated value of F is greater than the tabulated value (As well as P calculated value 0.006303033is lower r than 0.05), thus we will **reject the null hypothesis** and can say that **there is no significant difference in variation of Average Asdvances Per branch of banks during pre subprime crisis and post subprime crisis.**

Table No. 27 Summary of Hypothesis for the Study

Sr. No	Hypothesis for the Study	Accepted/ Rejected V/ X
1	There is no significant difference in variation of Business per employee of banks during pre subprime crisis and post subprime crisis.	**X**
2	There is no significant in variation of Deposit per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis	**X**
3	There is no significant in variation of Net profit per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis	**X**
4	There is no significant in variation of Advances per employees of banks during Pre Sub prime Crisis and Post Sub Prime Crisis	**X**
5	There is no significant difference in variation of Net Profit per Branch of banks during pre subprime crisis and post subprime crisis.	**X**
6	There is no significant in variation of Deposits Per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis	**V**
7	There is no significant in variation of Average Business Per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis	**V**
8	There is no significant in variation of Advances per Branch of banks during Pre Sub prime Crisis and Post Sub Prime Crisis	**X**

8. Conclusions

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From the productivity analysis of deposit per branch it is concluded that deposit per branch of Private sector is highest during pre-subprime crisis and in post subprime crisis 2008-2015 deposit per branch of public sector bank was highest it indicates that during this periods public sector banks was more focus on expansion of its branches in rural areas and taken positive efforts to increase their deposits. During the period of 2015-18 private sector banks were leading compare to public sector banks in increasing their deposit per branch. It was observed from the study that advances per branch of public sector bank was lowest during 2015-18 phase i.e during demonetization phase. It reflects that there were fall in advances sanction per branch of public sector banks where as private sector banks able to perform better in terms of sanctioning loans and advances. In terms of business wise ,again private sector banks ahead in race than public sector banks in all three phases. During the period of 2015-18 the net profit per branch of the public sector bank was negative and it shows that factor like demonetization, rising NPA, non performing branches in rural areas, rising interest expenses and non-interest expenses hit the public sector bank performance.

From the observed figure it is concluded that employee's productivity in terms of deposit is highest in public sector banks compared to private sector banks. This reflects the productivity of employees in collection of deposit is more in public sector banks than private sector banks. On the similar line advances and business per employee was more in public sector banks during post subprime crisis phase and period of 2015-18. It is concluded from the study that net profit per employee productivity is highest in private sector banks than public sector bank though the deposits, advances and business per employee productivity of public sector bank is better.

9. Suggestions

a. During the Pre subprime crisis period the deposit per employee productivity of Private sector was highest than public sector banks but in post subprime crises deposit per employee of public sector banks were more than private. So from this it is suggested to private sector banks can focus on how to raise more deposit and attract the customers by providing services at economical cost.

b. It is suggested that Kotak Mahindra bank should focus on increasing the advances per employee and business per employee as it overall trend during the pre-subprime crisis and post subprime crisis is low.

c. Central bank has to focus on increasing it business per employee as it is lowest in public sector bank and net profit per branch is negative. It is suggested that it

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should take corrective measures like increasing revenue through interest income, non-interest income, monitor the recovery of loan, increase the services provided to customer.

d. Net Profit per employee is negative in public sector banks and showing negative trend during 2015-16 to 2017-18. Therefore bank should take step to increasing non-interest income, cost reduction and reducing NPA.

e. Advances per branches post subprime crisis is decline in public sector banks and rising in private sector banks. From this it is suggested that public sector banks branches should focus on increasing its advances through corrective measures such as monitoring branch performance, closing down the non performing branches and developing customer friendly process for release of advances.

10. MODEL FOR PRODUCTIVITY IMPROVEMENT OF SELECTED SCHEDULED COMMERCIAL BANKS.

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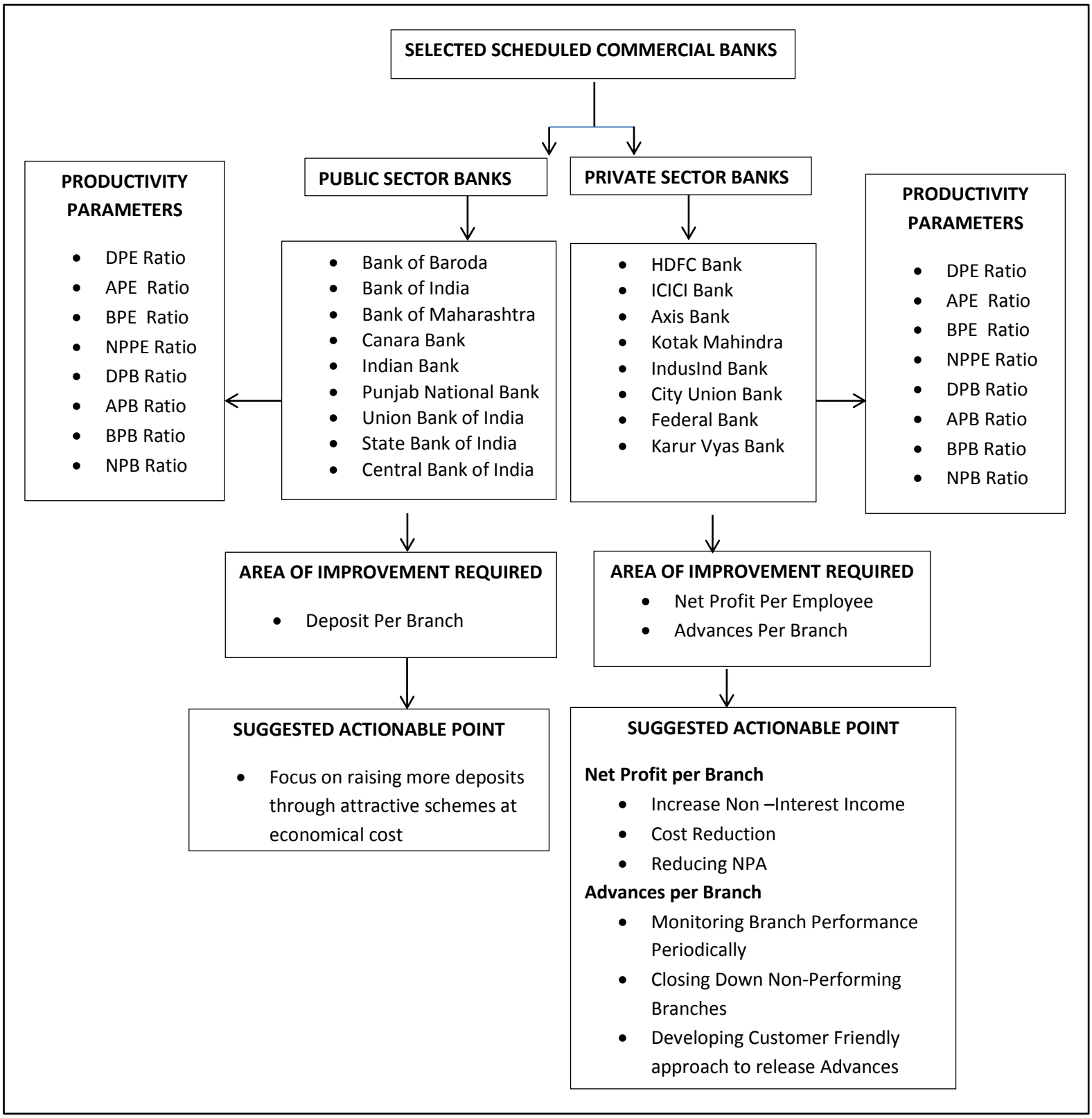

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