

Productivity Analysis in Public Sector Banks – A Study of Select Banks

¹Sravanthi M., ²Dr. P. Indrasena Reddy

¹Research Scholar, Department of Commerce and Bus. Mgmt., Kakatiya University, Warangal (T.S.), India.

²Professor of Commerce (Retd), Kakatiya University, Warangal (TS), India.

Email - sindhamsravanthi@gmail.com

Abstract: *The framework of the study explores the operational efficiency in terms of productivity of the selected public sector banks in India, i.e., Punjab National Bank and Bank of Baroda, during the study period from 2010-11 to 2019-20. Banks usually employ factorial productivity estimates such as business per employee and business per branch for computing operational efficiency while there are various other measures such as growth, productivity, portfolio analysis and viability and technical efficiency. Thus the focal point of the study explores to make an effort to figure out productivity aspects of the selected banks during the study period and how compelling is the importance of operational efficiency in the overall performance of the banks. The operational efficiency of the banks along with their productivity used to disclose the competitiveness and variation in their efficiencies. The study investigates comparative performance of employee, branch and financial productivity of selected banks during the study period. The study has considered six variables for assessing employee and branch productivity and five variables for financial productivity. On applying t-test, the result acknowledges that the employee, branch and financial productivity of the selected banks have been showing no significant difference. Accordingly Banks are ranked with reference to the values of mean and coefficient of variation it proved that BoB occupies better position compared to PNB. Therefore it is suggested that PNB has to pay attention on employee and branch productivity to intensify its operational efficiency.*

Key Words: *Public Sector Banks, India, Operational efficiency, Productivity.*

1. INTRODUCTION:

Banking is considered as one of the main components of the financial system. It has a broad impact on the entire financial market stability and the real strength of the economy. Banking system connects the fundamental economic units and plays the role of financial intermediation. It helps in the creation of wealth through the establishment of a series of interconnected economic relations and occupies a distinctive position in the Indian economy. Its largest presence is evident in terms of its significant contribution towards the primary, secondary and tertiary sectors along with employment generation and foreign exchange services. Commercial banks are the backbone of the Indian economy which serve as a bridge between savings and investments and are playing a dominant role in the financial sector. The Banking Sector in India is treated as main driver of the growth of an economy. The success or failure of the banks can be decided by the operational efficiency of the banks.

Financial soundness has a close relationship with the productivity of financial institutions. The overall growth of an economy depends to a great extent on the efficiency, productivity and soundness of its banking system. A sound banking system serves as an important medium for pushing economic growth by mobilization of small savings of unproductive domestic sector and putting them to the productive use. They are not only essential for the security and strength of the financial system, but also make significant contributions to the economy across the country. They continue to pursue all the opportunities available to enhance their productivity and competitiveness. Top bank management wants to identify and eliminate the underlying causes of inefficiencies, thus helping their firms to gain competitive advantage, or, at least, meet the challenges from others. Therefore, to survive in the competitive era banks have to monitor their performance by means of productivity analysis.

2. BRIEF PROFILE OF SELECTED BANKS:

PUNJAB NATIONAL BANK

The Punjab National Bank (PNB) India's first Swadeshi Bank was established on May 19th, 1894 by Lala Lajpat Rai in Punjab and it is the second prominent Public Sector Bank in India both in view of business and its network. The bank has opened its doors for its business activities on 12th April, 1895 at Ganpatrai Road in Lahore with the authorized capital of Rs. 2, 00,000, working capital was Rs. 20,000 and the total number of employees was only nine. With more than 125 years banking experience, as on 31st March, 2020 the bank had authorized share capital of Rs. 3000 crores, deposits amounts to Rs. 7,03,846 crores, advances Rs. 4,71,828 crores and Investments Rs. 2,40,466 crores. Bank has 13 Zonal Offices (ZOs), 76 Circle Offices and 7,041 branches with 68,781 employees and serving more than 11.5 crore

valued customers. The Bank has 3 Domestic Subsidiaries and 7 Domestic Associates and also has crossed the milestone of Rs. 12,20,000 crores Gross Global Business.

BANK OF BARODA

Bank of Baroda (BoB) is the third largest nationalized bank in India was established on 20th July, 1908 by Maharaja Sayajirao Gaekwad III in Baroda is a largest city (or vadodara) in Gujarat state. On 19th July 1969, Government of India nationalized Bank of Baroda along with other major commercial Banks in India. On 17th September, 2018 Government of India announced the merger of Vijaya Bank and Dena Bank with Bank of Baroda as per Government agenda effective from 1st April, 2019. With more than 112 years banking experience, as on 31st March, 2020 (after first year of merger) the bank had authorized share capital of Rs. 3000 crores (in that Government of India holds 71.60 %), deposits amounts to Rs. 9,45,984 crores, advances Rs. 6,90,120 crores and Investments Rs. 2,74,614 crores. The Bank has 84,283 employees in 9,482 branches which include 2,163 in metro, 1,860 in urban, 2,525 in semi urban and 2,934 branches in rural areas. The Bank has 101 branches in overseas across 21 countries and serving more than 13.2 crore valued customers.

3. REVIEW OF LITERATURE:

For measuring and analyzing the productivity in selected banks, the earlier studies were also reviewed. The main studies include-

Vishali (2019) in her study investigated the factors affecting the Employee productivity of Private Sector banks in India during the second reform phase with the help of Herfindahl's index of concentration and exponential growth rate. The results depicts that Federal Bank is highest among all the private sector banks with respect to net profit per employee and spread per employee and also highlighted the importance of employee productivity for the overall development of banks in India.

Radhika K and Kalyani V (2017) studied efficiency of Banks on the basis of Cost analysis. They found more efficiency in Andhra Bank when compared to State Bank of Hyderabad in terms of operating profit, total income, and interest income.

Amit kumar singh. (2017) evaluated operational efficiency of SBI in Gorakhpur district with the application of non-parametric operation research based Data envelopment Analysis model and obtained efficiency scores. The study revealed that SBI is less efficient in terms of generating output with controlling the input variables.

Amit K Parmar and Kulkarni A. R. (2017) in their study tested the hypothesis of the relationship between productivity of selected banks. For this purpose they have selected a sample of 16 banks which includes 9 public sector banks, 4 from old public sector banks and 3 from new private sector banks. After testing the hypothesis they concluded that Yes Bank was far better than other selected banks in terms of Business per employee and profit per employee.

Mahila Vasanthi Thangam. D and Salanki. K.T (2016) examined the relationship amongst the profitability and productivity of commercial banks of India. The banks entire profitability and productivity indices show that both public and private sector banks are profitable. They concluded that with the huge competition in the banking sector, profitability and productivity has become an immense challenge to Indian commercial banks. Banks should probe each and every possibility to upgrade and enhance their profitability.

Malaya Ranjan Mohapatra, Avizeet Lenka and Subrat Kumar Pradhan (2015) investigated the operational efficiency of Indian commercial banks and difficulties encountered by public sector banks. They have considered labour productivity, branch expansion and profitability ratios as the indicators for the study. They found that foreign banks are superior to commercial banks with respect to internal supervision and employee efficiency.

Vaishali, Yesha Tomar and Dangwal (2015) in their study analyzed employee productivity of 16 Public sector banks from 1998-99 to 2012-13 by using Herfindahl's Index of concentration and Exponential Growth Rate (EGR). The results of the study reported that syndicate bank assigned 1st rank in terms of net profit per employee, spread per employee and deposits per employee respectively and IDBI assigned 16th rank among all the public sector banks. They also recommended suggestions for the improvement of operational efficiency of the banks in India.

Seshadri, Pradeep Kumar and Narayana Reddy (2014) in their study evaluated the efficiency of public and private commercial banks through multiple output and input variables. such as interest income to total asset ratio, total income to total asset ratio, interest expended to total asset ratio, and total expenditure to total asset ratio. The results of the study disclose that banks are having low total income and high total assets seeming to be inefficiency of Indian scheduled commercial banks.

4. RESEARCH METHODOLOGY:

The present study deals with the operational performance in terms productivity in select banks, viz., Punjab National Bank and Bank of Baroda. The study is based on secondary data which have been gathered from published

annual reports of selected banks for the 10 years period from 2010-11 to 2019-20. For the purpose of analyzing the data various statistical tools like mean, CV, CAGR and student t-test has been administered to test the significance.

5. OBJECTIVES OF THE STUDY:

This research paper has been prepared with following objectives:

1. To measure the operational efficiency in terms of productivity in the selected banks.
2. To analyze the productivity in terms of per branch and per employee productivity.
3. To evaluate the financial productivity.
4. To Rank the selected Banks in terms of productivity.

6. ANALYSIS AND INTERPRETATION :

Productivity is the major contributing factor of operational efficiency. Every increase in productivity will lead to increase in profitability and further leads to overall efficiency of any organization including banking sector. However in the present circumstances it is witnessed that improved productivity has become very essential for the long term viability and required to manage their business in cost-effective manner.

The Productivity in the selected Banks was analysed in terms of Employee productivity, Branch productivity and Financial productivity by applying mean, coefficient of variation and CAGR analysis.

Employee and Branch Productivity

Long run viability of the banks is determined with the help of certain variables mainly employee and branch productivity ratios in respect of deposits, advances, business, total income, total expenditure and net profit. In order to know the operational efficiency of employees and branches of the selected banks in generating revenue, employee and branch productivity ratios are calculated during the study period from 2010-11 to 2019-20 and shown in Table-1.

From the Table 1, it is also can be observed that the ratios of employee and branch productivity of Bank of Baroda are impressive than Punjab National Bank. The business per employee (181.73) is highest for branch productivity of BoB. The least rate is observed for Net profit (0.001) of branch productivity of PNB. Employee productivity of PNB resulted a high ratio for business per employee (13.66), lowest and negative for net profit, where as BoB registered highest for business per employee (17.09) and minimal for total income (0.9).

The table also presents the coefficient of variation values of PNB & BoB with regards to employee and branch productivity. The excessive variability and less consistency is found for net profit of branch productivity of PNB and the lowest variability and more consistency is figured out for net profit of employee productivity of PNB. Except advances of branch of PNB remaining variables ratios are more than the BoB. Overall employee productivity of both the banks, total expenditure per employee recorded high level rate (21.33) and least being net profit of PNB.

It also exhibits Compound Annual Growth Rate values of PNB & BoB. CAGR rates were higher in PNB for almost all the variables of employee and branch except total expenditure of PNB. Highest growth rate is seen for employee productivity of BoB for total expenditure (7.17), followed by employee productivity of PNB (7.06). Least and negative growth rate is noticed for BoB for net profit per branch.

Table - 1
Mean Analysis of Employee and Branch Productivity of PNB & BoB

Banks →	Mean, Coefficient of Variation & CAGR Analysis											
	PUNJAB NATIONAL BANK						BANK OF BARODA					
	Employee Productivity			Branch Productivity			Employee Productivity			Branch Productivity		
Variables	MEAN	CV	CAGR	MEAN	CV	CAGR	MEAN	CV	CAGR	MEAN	CV	CAGR
Deposits	7.65	20.26	6.44	80.3	17.16	5.16	10.85	0.95	3.95	106.62	8.4	1.05
Advances	5.53	14.1	4.91	58.15	11.02	3.68	7.29	2.29	3.66	71.71	12.83	0.79
Business	13.66	18	5.98	138.39	14.5	4.55	17.09	4.17	4.32	181.73	7.54	0.95
Total Income	0.74	13.5	5.47	7.81	10.5	4.27	0.9	-26.13	5.1	8.85	8.02	2.29
Total Expenditure	0.75	21.33	7.06	7.82	19.69	5.86	0.86	19.76	7.17	8.44	15.28	4.17
Net profit	-0.0016	-5000	-25.6	0.001	95000	-24.67	0.04	175	-24.35	0.41	182.92	-26.13

Source: Annual Reports of selected banks.

Note: 1. Mean is presented in terms of Crores

2. CAGR is presented in terms of Percentages

Financial Productivity

For the purpose of examining the financial productivity of the banks certain variables have been employed in the present study, mainly return on advances, return on investments, cost of deposits, credit deposit ratio and investment deposit ratio for the study period from 2010-11 to 2019-20 are calculated and shown in Table-2.

Table - 2
Mean, CV and CAGR Analysis of Financial Productivity of PNB & BoB

Banks→ ↓ Variables	Financial Productivity Analysis with respect to Mean, CV & CAGR					
	PUNJAB NATIONAL BANK			BANK OF BARODA		
	Mean	CV	CAGR	Mean	CV	CAGR
Return on Advances	9.39	16.18	-2.97	8.05	9.06	-0.59
Return on Investments	7.58	4.48	0.11	5.65	40.7	-14.04
Cost of Deposits	5.75	11.65	-0.15	5.05	8.71	0.88
Credit Deposit Ratio	73.13	6.84	-1.42	81.14	6.23	-1.14
Investment Deposit Ratio	31.15	5.55	1.16	23.76	15.4	2.19

Source: Annual Reports of selected banks.

Note: 1. Mean presented in terms of Crores

2. CAGR & CV is presented in terms of Percentages

Table-2 presents the values of mean, CV and CAGR of calculated ratios in chosen banks. It is found that higher average rate of credit deposit ratio in BoB (81.14) when compared to PNB (73.13). CV is registered as highest for return on investments of BoB (40.7) and for cost of deposits (11.65) of PNB. Acceptable growth rate is observed for investment deposit ratio of BoB (2.19). Most of the variables of both the banks found negative growth rate in respect of financial productivity. It is witnessed a high level of difference in the variation of return on investments for both.

Ranking of Banks based on Mean Analysis

Ranks are specified to the selected variables of employee and branch productivity of PNB & BoB with respect to mean analysis. By using merit rating method scores of merit are assigned by the following procedure. Ranks are given on the basis that higher ratio of mean value is given first which means remarkable performance, eventually for lower values scores 2,3,4.... in that manner ranks are given to the specified banks for the variables deposits, advances, net profit, business, investment and total income per employee. Therefore a bank would receive the lowest score which have highest values of ratio that implies better performance and vice versa. But for the total expenditure per employee higher value of ratio conveys poor performance and lower mean value ratio constitute rank 1 and later higher scores are given 2,3,4....ranks accordingly. Thus the least score elicit supreme performance. Summation of all ranks of all the variables is known as ranks total. The aggregate ranking scored (least scored gained first rank and vice versa) with respect to ranks total is shown in Table-3.

Table - 3

Ranking Based on Mean Analysis				
Bank→ ↓ Variables	Employee Productivity		Branch Productivity	
	PNB	BOB	PNB	BOB
Deposits	2	1	2	1
Advances	2	1	2	1
Business	1	2	2	1
Total Income	2	1	2	1
Total Expenditure	1	2	1	2
Net profit	2	1	2	1
Ranks Total	10	8	11	7
Aggregate Ranking	2	1	2	1

Source: Assigned ranks based on Table 1 of PNB & BoB.

The Table-3 summarizes ranking scores of opted banks in terms of mean values for each of the variables.

Employee Productivity: BoB > PNB

Branch Productivity: BoB > PNB

It can be inferred that BoB reveals desirable performance in context of employee productivity and branch productivity.

Ranking of Banks with respect to Coefficient of Variation Analysis

Rankings are assigned to the different variables of employee and branch productivity of PNB & BoB bank with reference to coefficient of variation analysis. Appropriately merit rating procedure is applied for giving merit rating scores in the following way. Ranks are allotted on the criteria that lowest variation with rank 1 and vice versa, which indicates that lowest variation implies better performance with regards to consistency. Higher CV value indicates poor performance and scores ranks like 2,3,4.... of the specified banks. The ranking based on CV is shown in Table-4.

Table - 4

Ranking Based on Coefficient of Variation Analysis				
Bank→ ↓ Variables	Employee Productivity		Branch Productivity	
	PNB	BOB	PNB	BOB
Deposits	2	1	2	1
Advances	1	2	1	2
Business	2	1	1	2
Total Income	2	1	1	2
Total Expenditure	2	1	1	2
Net profit	1	2	1	2
Ranks Total	10	8	7	11
Aggregate Ranking	2	1	1	2

Source: Assigned ranks based on table 2 values of PNB & BoB.

Table-4 exhibits ranking scores of selected banks based on CV values for each of the variables.

Employee Productivity: BoB > PNB

Branch Productivity: PNB > BoB

It can be concluded that BoB exhibits relatively good performance with respect to employee productivity and PNB in case of branch productivity.

Ranking of Banks with respect to Mean, CV Analysis for Financial Productivity

The same methodology has been considered for allotting ranks in terms of mean and CV for financial productivity and ranking is shown in Table-5.

Table-5 presents ranking scores of selected banks with reference to mean values for each one of the variables of financial Productivity. It can be concluded that PNB shows superior performance in respect to financial productivity than BoB bank.

Financial Productivity: PNB > BoB

Table-5 also shows ranking scores of selected banks with reference to CV values for each one of the variables.

Financial Productivity: BoB > PNB

It can be concluded that BoB shows superior performance in respect to financial productivity than PNB bank.

Table - 5

Ranking Based on Mean Analysis & Coefficient of Variation				
Bank→ ↓ Variables	Financial Productivity			
	Mean		CV	
	PNB	BOB	PNB	BOB
Return on Advances	1	2	1	2
Return on Investments	1	2	2	1
Cost of Deposits	2	1	2	1
Credit Deposit Ratio	2	1	1	2
Investment Deposit Ratio	1	2	2	1
Ranks Total	7	8	8	7
Aggregate Ranking	1	2	2	1

Source: Assignment of ranks based on Table 2 values of PNB & BoB.

FORMULATION OF HYPOTHESIS

Based on the objectives mentioned in the study the following hypothesis is formulated for the study.

Null Hypothesis: ($H_0: \mu_1 = \mu_2$)

H_{01} : There is no significant difference between Means of employee productivity, branch productivity and financial productivity of PNB & BoB.

Alternative Hypothesis (Right tailed test at 5% Los) ($H_a: \mu_1 > \mu_2$)

H_{a1} : Employee productivity, Branch productivity and Financial productivity of PNB is better than BoB bank.

Alternative Hypothesis (Left tailed test at 5% Los) ($H_a: \mu_1 < \mu_2$)

H_{a1} : Employee productivity, Branch productivity and Financial productivity of BoB is better than PNB bank.

The Table-6 represents results of two tailed student t- test. It is very much clear that there is no significant difference between the means of employee, branch and financial productivity of PNB & BoB banks at 5% level of significance.

Table - 6

Testing of Hypothesis: Employee, Branch & Financial Productivity of PNB & BoB					
Productivity	Two Tailed Test			Decision	Performance of Banks
	5% Level of Significance				
	t-calculated	t-table value	p value		
Employee Productivity	-0.40802	2.2281389	0.6918561	Accept HO	PNB = BoB
Branch Productivity	-0.385696	2.2281389	0.7077998	Accept HO	PNB = BoB
Financial Productivity	0.0346361	2.3060041	0.9732185	Accept HO	PNB = BoB

Source: Calculations based on the mean values.

Note: Equal to (=) sign indicates average performance of selected banks is similar.

Table - 7

Testing of Hypothesis: Employee, Branch & Financial Productivity of PNB & BoB					
Productivity	One Tailed Test			Decision	Performance of Banks
	5% Level of Significance				
	t-calculated	t-table value	p value		
Employee Productivity	-0.40802	1.812461	0.345928	Accept HO	PNB = BoB
Branch Productivity	-0.385696	1.8124611	0.353899	Accept HO	PNB = BoB
Financial Productivity	0.0346361	1.859548	0.4866093	Accept HO	PNB = BoB

Source: Calculations based on the mean values.

Note: Equal to (=) sign indicates average performance of selected banks is similar.

The summarized results of one tailed t- test exhibited in the above Table-7, it is obvious that there is no significant difference between the means of employee, branch and financial productivity of PNB & BoB at 5% level of significance.

On application of two tailed & one tailed test, it is noticed that under the pair of tests the null hypothesis is accepted which suggests that in all the facets there is no much difference between the average performance of chosen banks during the period of the study.

7. FINDINGS AND RECOMMENDATIONS:

After in depth analysis, it can be inferred that branch and employee efficiency in BoB showed much better than PNB. All of the variables like deposits, advances, business, income, expenditure and net profit of employee and branch productivity of Bank of Baroda are impressive than Punjab National Bank. Financial efficiency is found to be better for PNB, except the variable, i.e., cost deposit ratio, all other financial variables are more than the BoB. The chosen public

sector banks are strong competitors in banking industry in India. It is understood from the analysis that PNB has to enhance its employee level as well as branch level productivity in order to be competitive.

REFERENCES:

1. Dr. Vishali. (2019). Productivity Appraisal: An Empirical study of selected commercial banks in India, *Journal for all subjects*, 6(5), 1-14.
2. K. Radhika & V. Kalyani. (2017). Operational Analysis of selected public sector Banks –A Study, *Splint International Journal of Professionals*, IV(5), 7-15.
3. Amit K Parmar & Dr. A. R. Kulkarni. (2017). Analysis of Productivity of Indian Banks: A Comparative Study of Selected Public and Private Banks, *Research Guru: Online Journal of Multidisciplinary Subjects*, 11(1)32-40.
4. Dr. D. Mahila Vasanthi Thangam & Salanki.K.T. (2016). Profitability analysis of selected public and private banks in India, *IJSEAS*, 2(2), 392-403.
5. Mohaptra Malaya Ranjan, Lenka Avizeet & Pradhan Subrat Kumar. (2015). A Study of Operational Efficiency of Commercial Banks in Indian Financial System: At a Glance, *Abhinav Journal of Research in Commerce & Management*, 4(6), 13-18.
6. Vaishali, Yesha Tomar & R C Dangwal. (2015). Influence of Employee Productivity on the performance of Public Sector Banks in India, *Journal of Accounting and Finance*, 29(1),71-90.
7. N. Seshadri, Dr. D. Pradeep Kumar & Dr. T. Narayana Reddy. (2014). Efficiency of public and private commercial banks in India A comparative study, *IOSR Journal of Economics and Finance*, 1(4), 21-25.