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# A Study on Efficiency and Productivity of Commercial Banks Using Accounting Measures

KEYWORDS: Efficiency, Productivity, Accounting Ratios

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**ABSTRACT** *Financial accuracy of the banking sector is the back bone of a country's economy. Commercial banks generally are simple business concerns which provide various types of financial services to customers in one form or another, such as interest income is in the form on advances and income on investments and another non-interest income component is discount, fee, commissions, and to evaluate the difference between the interest earned and interest paid and so on. This paper studies the productivity and efficiency of two public and two private sector commercial banks under accounting measures for the period from 1999-2000 to 2012-2013. In the liberalized competitive environment, the private sector banks give a very tough competition with information technology to the public sector banks in terms of controlling operational cost, asset management, banks performance and income generation per employee, per branch and net interest margin to total asset are comparing between public and private sector commercial banks in India.*

## INTRODUCTION

A well-functioning financial sector simplifies efficient intermediation of financial resources. The more efficient financial system is the allocation of financial resources and its resource generation, the greater is the contribution to economic growth. An efficient financial intermediation also contributes to the threat justification process in the economy. The enhanced efficiency in the Indian banking system can be a result of greater innovations and improved profitability, greater safety and soundness in productivity and challenged towards strengthening capital and minimize risk. Additionally, efficiency and productivity methods could be act as leading indicators for surfacing strengths and weaknesses of the banking system and could enable anticipatory steps by the regulator when necessary. Consequently, investigation and measurement of efficiency and productivity in the banking sector have always been extents of interest for economic research. While selecting the variable might be vary from country to country and associated with the efficiency and productivity of banks. Banking policies should be tapped by environmental conveniences of economies of scale, introduction of new technologies, diversification of activities are driving forces to increase the efficiency and productivity. The banks should attention towards the policy makers all over the world.

## REVIEW OF LITERATURE

Klaus Schaech and Martin Cihak et al (2008) found that competition strongly increases bank reliability, through the efficiency channel. Santha Vaithilingm and Nair et al (2006) showed that development of the Infrastructure, Intellectual Capital, Institutions, Integrity, Interaction and Innovations are significantly more in developed countries than the developing and underdeveloped countries and donate certainly to the soundness of the banks. FSDI (2006), includes not only measures of return on assets and ratio of operating cost to assets but also information on banking system measures the competitiveness of bank, this suggests that one cannot focus solely concentration ratios as a measure of competition when making inferences about the efficiency of bank. ECB (2010) reported that roe take account of quality of assets, capacity of funding and production value, strategy and business structure associated with risk hungriness of banks one of the most important elements in the assessment of bank efficiency to perform in the future. Bryan and Yinghong et al found that Roe of 29.86% in 2007 compared to the Roe of 30.68% in 2003. In the year 2007 provisions for bad and doubtful debts for the banks were very high in consideration on average and across study period. In this case provisions for bad and doubtful debts should be reduced and steps to be taken to attain efficiency of banks. Manoj P.K (2010) found that profitability should increases enhancing non-interest income through investments in high technology rather than traditional fund based activities and banks might be focus on generation of income from lending activities rather than investing more in govt securities. Fred, Stephen & Arthur (2009) conveyed that essential attention must be paid towards increasing the efficiency of banks. Varadi, et al (2006) measured the efficiency of Indian banks and determined the performance of banks were of vital importance to stabilize a nation's economy and identified indicators for efficiency - i.e., Profitability, Productivity, Asset Management and Financial management and concluded that nationalized bank have shown high performance. Devanadhen K (2013) concluded that Private sector banks HDFC bank, Axis bank and ICICI bank had particular tough competition, with respect to the public sector banks Andhra bank secured 1st place followed by corporation bank in standings of Asset Quality, Management Efficiency and Earning Capacity. Sinha, Pankaj and Dipanwita (2011) concluded that there is inverse relationship between Credit demand and Bond yields and had a positive relationship with Gross Domestic Product and Credit Demand. Through the period of study interest rate scenario the attack of inflation pushes people to spend more rather than sustenance. NII had a key role in determining the efficiency and profitability of bank due to mix of deposits had a positive impact on NII.

**Statement of the problem:**

It is a comparative study of group of public and private sector commercial banks in the system of their efficiency and productivity measured with financial ratios (accounting measures), along with the factors viz., custom of size of banks, business and non-business operations of the banks, profitability position, income per employee and branch.

**Objectives:**

- To analyze the efficiency of selected Public and Private commercial banks in India
- To know the productivity of the banks over the study period

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- To compare the profitability in terms of return on equity and return on assets of selected banks.

## RESEARCH METHODOLOGY

**Research Design:** In view of the above objectives of the study, descriptive research design was adopted for the present study which largely interprets the already available information, and it lays particular emphasis on analysis and interpretation of available information and it make use of secondary data.

**Source of Data:** The study is based on secondary data consists of the annual reports of banks and Reserve bank of India statistical table for 12 years.

**Tools of analysis:** The data collected for the study was analyzed logically and meaningfully to arrive at conclusions. Statistical tools like, averages and percentages are used.

**Accounting Measures:** Operating cost to total Asset ratio, Cost to Income Ratio, Labor Cost per Unit of Earning Assets, Non-Labor Cost to total assets, Net interest margin to total assets, Non-interest income to total income ratio, Income per employee, Income per Branch, Return on Assets (RoA) and Return on Equity (RoE).

## DATA ANALYSIS AND INTERPRETATION

Table:1 Efficiency ratios

| Operating Costs to Total Assets Ratio (%) | | | | | Cost to Income Ratio ( % ) | | | | Net Interest Margin to Total Assets %) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Public Sector Banks | | Private Sector Banks | | Public Sector Banks | | Private Sector Banks | | Public Sector Banks | | Private Sector Banks | |
| Year | SBI | Andhra bank | AXIS | ICICI | SBI | Andhra bank | AXIS | ICICI | SBI | Andhra bank | AXIS | ICICI |
| 1999-00 | 0.0907 | 0.0983 | 0.0785 | 0.078 | 0.9204 | 0.9279 | 0.9114 | 0.8994 | 0.0265 | 0.0263 | 0.0136 | 0.0154 |
| 2000-01 | 0.09 | 0.0961 | 0.0898 | 0.0654 | 0.9466 | 0.9417 | 0.9182 | 0.8827 | 0.0266 | 0.0245 | 0.0091 | 0.0205 |
| 2001-02 | 0.0907 | 0.1018 | 0.1017 | 0.0238 | 0.9285 | 0.9133 | 0.9159 | 0.9024 | 0.0261 | 0.0275 | 0.0139 | 0.0057 |
| 2002-03 | 0.0897 | 0.0934 | 0.0857 | 0.106 | 0.9157 | 0.8238 | 0.8968 | 0.9037 | 0.0265 | 0.0305 | 0.0164 | 0.0133 |
| 2003-04 | 0.0826 | 0.0904 | 0.0765 | 0.0824 | 0.885 | 0.8394 | 0.872 | 0.8631 | 0.0274 | 0.0337 | 0.0234 | 0.015 |
| 2004-05 | 0.0766 | 0.0746 | 0.0531 | 0.0645 | 0.8912 | 0.8062 | 0.8609 | 0.8437 | 0.0303 | 0.0327 | 0.0194 | 0.0169 |
| 2005-06 | 0.0785 | 0.0634 | 0.0627 | 0.0648 | 0.898 | 0.8238 | 0.8653 | 0.865 | 0.0317 | 0.0287 | 0.0217 | 0.0167 |
| 2006-07 | 0.0748 | 0.0694 | 0.0667 | 0.0779 | 0.9032 | 0.8598 | 0.8812 | 0.8962 | 0.0283 | 0.0298 | 0.0214 | 0.0193 |
| 2007-08 | 0.0715 | 0.0773 | 0.0701 | 0.0888 | 0.8847 | 0.8838 | 0.8777 | 0.8952 | 0.0236 | 0.0251 | 0.0236 | 0.0183 |
| 2008-09 | 0.0698 | 0.0801 | 0.0807 | 0.0935 | 0.8807 | 0.8936 | 0.8678 | 0.9042 | 0.0216 | 0.0238 | 0.025 | 0.0221 |
| 2009-10 | 0.0729 | 0.0696 | 0.0723 | 0.0797 | 0.8934 | 0.8575 | 0.8386 | 0.878 | 0.0225 | 0.0243 | 0.0277 | 0.0223 |
| 2010-11 | 0.0727 | 0.0727 | 0.0676 | 0.0688 | 0.9235 | 0.8621 | 0.8288 | 0.8443 | 0.0266 | 0.0296 | 0.027 | 0.0222 |
| 2011-12 | 0.0818 | 0.0869 | 0.0811 | 0.0739 | 0.9033 | 0.8898 | 0.8453 | 0.844 | 0.0324 | 0.0301 | 0.0281 | 0.0227 |
| 2012-13 | 0.0776 | 0.0866 | 0.0838 | 0.0747 | 0.8961 | 0.9076 | 0.8465 | 0.8281 | 0.0283 | 0.0257 | 0.0284 | 0.0258 |
| Average = | 0.080 | 0.083 | 0.076 | 0.074 | 0.905 | 0.874 | 0.873 | 0.875 | 0.027 | 0.028 | 0.021 | 0.018 |
| Growth = | -14.443 | -11.902 | 6.752 | -4.231 | -2.640 | -2.188 | -7.121 | -7.928 | 6.792 | -2.281 | 108.84 | 67.532 |

Source: Data collected from bank web sites and Computed based on report on currency and finance (2000-12) (RBI).

**Operating cost to total asset ratio:** Operating cost to total asset ratio of Public (State bank of India and Andhra Bank) and private sector banks (Axis bank and ICICI Bank) , the Operating Costs to Total Assets ratio indicates the amount of operating costs expended per unit of assets. The operating cost to total assets of SBI in the year 2008-09, smallest ratio of 0.0698 and in the year 2000-02 are highest value 0.0907. Andhra bank has lower the operating cost to total asset ratio of 0.0696 in the year 2009-10 and higher the ratio of 0.1018 in the year 2001-02. Private sector banks like Axis bank operating cost to total asset ratio initially increased from the year 1999-2000 to 2001-02 value from the ratio of 0.0785 to 0.1017 And again decreased in the year 2004-05 with the ratio of 0.0531 and increased in the year 2008-09 and again decreased and increased in the year 2012-2013. Larger the ratio, the lower is the efficiency.

**The cost to income ratio:** The cost to income ratio (every one rupee of income) represents how viability the funds have been deployed by the banks. The cost to income ratio for the State Bank of India was lowest ratio is .8807 in the year 2008-09 and the highest ratio 0.9466 in the year 2000-01. The ratio in the initial period was high 0.9466 and later on it was decreased from year by year. Andhra bank cost to income ratio was lowest value 0.8062 in the year 2004-05 and highest value 0.9417 in the year 2000-01. Cost to income ratio for axis bank was initially increase from year 2000- 2001 and again drastically decreasing from the year 2001 with the highest value of 0.9182 to lowest value of 0.8288 in the year 2010-11. The cost to income ratio of ICICI bank was more volatile and more fluctuation; it has the highest value of 0.9042 in the year 2008-09, and lowest value 0.8280.

**Net Interest Margin**: The spread is defined as difference between the total interest expended and total interest earned. State bank of India Net Interest Margin varies with the minimum ratio of 0.0216 in the year 2008-2009 and maximum ratio of 0.0324 in the year 2011-2012. The overall spread will be fluctuating from 1999-00 to 2012-2013 with a ratio of 0.0265 to 0.283. Andhra bank spread varies with the lowest ratio 0.0238 in the year 2008-09 and highest ratio 0.0337 in the year 2003-04. The ratio had flat trend from 1999-00 to 2012-13 are 0.0263 to 0.0257. Axis bank Net interest margin to total assets ratio varies with the lowest value 0.0091 in the

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year 2000-01 and highest with 0.0284 in the year 2012-13. And it shows up trend from the beginning 0.0136 in the year 1999-00 to 0.0281 in the year 2012-13. Net Interest Margin to total asset ratio of ICICI bank varies with the lowest value of 0.0057 in the year 2001-02 and highest ratio 0.0258 in the year 2012-13.it shows from the beginning the ratio is 0.0154 and ending ratio 0.0258, it is up trend. This ratio indicates as to how effectively the banks deploy all their funds to generate income from credit and investment operations.

**Labour Cost per Unit of Earning Assets:** Labour Cost per Unit of Earning Assets of Public and Private sector banks from the period of 1999 to 2013. State bank of India ratio was increased from 0.0171 to 0.0190, from the year 1999-00 to 2000-01. Further it was decreased from the Year 2000-01 with the ratio of 0.0190 to 0.0117 in the year 2012-13. Labour Cost per Unit of Earning Assets of Andhra bank was increased from 0.0165 to 0.0166 from the period 1999-0 to 2000-01, further the ratio has decreased to 0.0088 in the year 2012-2013. Labour Cost per Unit of Earning Assets of Axis bank was increased 0.0023 to 0.0070 from the year 1999-00 to 2012-13. The value of labour cost will be increasing in the axis bank due to decreasing the earnings on assets. ICICI bank Labour Cost per Unit of Earning Assets ratio was increased from 0.0030 to 0.0073, from period 1999-00 to 2012-13. From the above analysis public sector banks Labour Cost per Unit of Earning Assets ratio for the study period it was decreased and private sector banks ratio was increased from the initial. Both are in opposite direction in the study period. Labour cost shows an important role in determining the profitability of banks.

**Table:2 Profitability ratios**

| Year | Labour Cost per Unit of Earning Assets (%) | | | | Return on Assets (%) | | | | Return on Equity (%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Public Sector Banks | | Private Sector Banks | | Public Sector Banks | | Private Sector Banks | | Public Sector Banks | | Private Sector Banks | |
| | SBI | Andhra bank | AXIS | ICICI | SBI | Andhra bank | AXIS | ICICI | SBI | Andhra bank | AXIS | ICICI |
| 1999-00 | 0.0171 | 0.0165 | 0.0023 | 0.003 | 0.0078 | 0.0076 | 0.0076 | 0.0087 | 0.1689 | 0.3466 | 0.3861 | 0.535 |
| 2000-01 | 0.0190 | 0.0166 | 0.0026 | 0.0026 | 0.0051 | 0.0059 | 0.008 | 0.0087 | 0.1192 | 0.2693 | 0.6529 | 0.8717 |
| 2001-02 | 0.0148 | 0.0149 | 0.0034 | 0.0014 | 0.007 | 0.0097 | 0.0093 | 0.0026 | 0.1597 | 0.4495 | 0.6991 | 1.2137 |
| 2002-03 | 0.0151 | 0.0161 | 0.0043 | 0.0038 | 0.0083 | 0.02 | 0.0099 | 0.0113 | 0.1805 | 1.2327 | 0.8401 | 1.9688 |
| 2003-04 | 0.0158 | 0.0152 | 0.005 | 0.0044 | 0.0107 | 0.0173 | 0.0112 | 0.0131 | 0.2164 | 1.1687 | 1.1719 | 2.6559 |
| 2004-05 | 0.015 | 0.0165 | 0.0047 | 0.0044 | 0.0094 | 0.0179 | 0.0086 | 0.012 | 0.1788 | 1.4664 | 1.1825 | 2.7217 |
| 2005-06 | 0.0164 | 0.0121 | 0.0048 | 0.0043 | 0.0089 | 0.0136 | 0.0098 | 0.0101 | 0.1594 | 1.1382 | 1.7406 | 2.8546 |
| 2006-07 | 0.014 | 0.0115 | 0.0052 | 0.0047 | 0.008 | 0.0113 | 0.009 | 0.009 | 0.1451 | 1.1091 | 2.3401 | 3.4583 |
| 2007-08 | 0.0108 | 0.009 | 0.0061 | 0.0052 | 0.0093 | 0.0102 | 0.0098 | 0.0104 | 0.1372 | 1.1867 | 2.9941 | 3.7367 |
| 2008-09 | 0.0101 | 0.0091 | 0.0068 | 0.0052 | 0.0095 | 0.0095 | 0.0123 | 0.0099 | 0.1574 | 1.3465 | 5.0566 | 3.3757 |
| 2009-10 | 0.0121 | 0.0091 | 0.007 | 0.0053 | 0.0087 | 0.0116 | 0.0139 | 0.0111 | 0.139 | 2.1564 | 6.2061 | 3.6102 |
| 2010-11 | 0.0118 | 0.0101 | 0.0066 | 0.0069 | 0.006 | 0.0116 | 0.014 | 0.0127 | 0.1134 | 2.2643 | 8.2535 | 4.4724 |
| 2011-12 | 0.0127 | 0.0092 | 0.0073 | 0.0074 | 0.0088 | 0.0108 | 0.0149 | 0.0136 | 0.1392 | 2.403 | 10.2667 | 5.6085 |
| 2012-13 | 0.0117 | 0.0088 | 0.0070 | 0.0073 | 0.009 | 0.0088 | 0.0152 | 0.0155 | 0.1426 | 2.3037 | 11.0683 | 7.2167 |
| Average = | 0.0140 | 0.0125 | 0.0052 | 0.0047 | 0.0083 | 0.0118 | 0.0110 | 0.0106 | 0.1541 | 1.3458 | 3.7756 | 3.1643 |
| Growth = | -31.58 | -46.67 | 204.35 | 143.33 | 15.38 | 15.79 | 100.00 | 78.16 | -15.57 | 564.66 | 2766.69 | 1248.92 |

Source: Data collected from bank web sites and Computed based on report on currency and finance (2005-12) (RBI).

**Return on Assets**: ROA is a sign as to how much profit a business unit is capable to generate per unit of assets. Higher value of this ratio is indicate of higher profitability and hence, productivity. State bank of India varied from 0.0078 to 0.0090 in the years 1999-00 to 2012-13. This fluctuation is lies between 0.0051 to 0.0107, it indicate flat trend. Andhra bank return on assets varied from 0.0076 to 0.0102 in the years 1999-00 to 2012-13, and it lies between the ratios of 0.0076 to 0.0200. Axis bank ratio varied from 0.0076 to 0.0152 in the years 1999-00 to 2012-13, it lies between the lowest ratio 0.0076 and highest ratio 0.0152. it has high fluctuation and uptrend. ICICI bank ratio varies from 0.0087 to 0.0155 in the years from 1999-00 to 2012-13. It lays between the lowest ratios 0.0087 to the highest ratio 0.0155. Both the private sector banks have uptrend,

**Return on Equity:** ROE is defined as the ratio of net profits after tax to total equity capital; it is used as an alternative measure of profitability. It shows that the Return on Equity of public and private sector commercial banks during a period from1999-00 to 2012-13. State bank of India return on equity ratio varied from 0.1629 to 0.1426 from the period 1999-00 to 2012-13. SBI is fluctuating between lowest ratios 0.1134 to highest ratio 0.2164. Andhra bank return on equity varied with the ratio of 0.3446 to 2.3037 from the period 1999-00 to 2012-13. Axis bank return on equity ratio varied with the ratio of 0.3681 to 11.0683 from the period 1999-00 to 2012-13. ICICI bank return on equity ratio varies with 0.5350 to 7.2167 from the period 1999-00 to2012-13.

**Non- labour cost to total assets:** It exhibits Non- labour cost to total assets of public and private sector banks from the period 1999-13. SBI non-labour cost to total assets ratio varies with lowest value0.0597 in the year 2008-09 and highest value 0.0759 in the year 2001-02. The overall trend for the study period was declining from 1999-13. Non- labour cost to total asset ratio of Andhra bank varies with the lowest value 0.0513 in the year2005-06 and highest value 0.0817 in the 1999-00. The overall trend for the bank was decreasing form 1999-00 to 2012-13. Non- labour cost to total asset ratio of Axis bank has the lowest value of 0.0484 in the year 2004-05 and highest value 0.0982 in the 2001-02. The overall trend for the bank was fluctuating form 1999-00 to 2012-13. Non- labour cost to total asset ratio of ICICI bank varies with the lowest value 0.0223 in the year2001-02 and highest value 0.1022 in the 2002-03. The overall trend for the bank was flat form 1999-00 to 2012-13. Non-Labour Cost With increased emphasis on technological solutions for quicker processing

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of data and routine tasks, and for providing more "customer friendly" services, the non-labour costs of banks, in absolute terms, have been on the rise.

Table:3 Productivity Ratios

| Income per employee ( Rs Millions) | | | | | Income per Branch (Rs Millions) | | | | Non-Labour Cost to total assets (%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Public Sector Banks | | Private Sector Banks | | Public Sector Banks | | Private Sector Banks | | Public Sector Banks | | Private Sector Banks | |
| | SBI | Andhra bank | AXIS | ICICI | SBI | Andhra bank | AXIS | ICICI | SBI | Andhra bank | AXIS | ICICI |
| 2001-02 | 0.1623 | 0.1822 | 0.927 | 0.3548 | 3.736 | 2.177 | 14.245 | 7.636 | 0.0736 | 0.0817 | 0.0762 | 0.075 |
| 2002-03 | 0.1762 | 0.2154 | 0.8018 | 1.0851 | 4.053 | 2.506 | 13.683 | 31.956 | 0.071 | 0.0794 | 0.0871 | 0.0628 |
| 2003-04 | 0.1839 | 0.2222 | 0.6149 | 0.8788 | 4.181 | 2.568 | 11.458 | 28.542 | 0.0759 | 0.0869 | 0.0982 | 0.0223 |
| 2004-05 | 0.1924 | 0.2309 | 0.4889 | 0.7114 | 4.306 | 2.605 | 9.311 | 24.905 | 0.0746 | 0.0773 | 0.0814 | 0.1022 |
| 2005-06 | 0.2172 | 0.2233 | 0.5497 | 0.7387 | 4.673 | 2.646 | 10.352 | 33.430 | 0.0668 | 0.0753 | 0.0715 | 0.0781 |
| 2006-07 | 0.2532 | 0.2775 | 0.5558 | 0.899 | 4.912 | 3.193 | 11.072 | 42.016 | 0.0616 | 0.0581 | 0.0484 | 0.0601 |
| 2007-08 | 0.3256 | 0.3699 | 0.5941 | 0.975 | 5.462 | 3.534 | 13.450 | 31.209 | 0.0621 | 0.0513 | 0.0579 | 0.0605 |
| 2008-09 | 0.3714 | 0.4307 | 0.6658 | 1.1334 | 6.355 | 4.197 | 16.525 | 27.382 | 0.0608 | 0.0579 | 0.0615 | 0.0732 |
| 2009-10 | 0.4292 | 0.5134 | 0.7201 | 0.936 | 6.565 | 4.626 | 15.057 | 19.197 | 0.0608 | 0.0683 | 0.064 | 0.0836 |
| 2010-11 | 0.4321 | 0.6517 | 0.7512 | 1.2285 | 6.858 | 5.535 | 13.553 | 12.898 | 0.0597 | 0.071 | 0.0739 | 0.0883 |
| 2011-12 | 0.5609 | 0.8079 | 0.8638 | 1.6414 | 8.443 | 7.125 | 16.545 | 14.910 | 0.0608 | 0.0605 | 0.0654 | 0.0744 |
| Average = | 0.300 | 0.375 | 0.685 | 0.962 | 5.413 | 3.701 | 13.204 | 24.916 | 0.0609 | 0.0626 | 0.0609 | 0.0618 |
| Growth = | 245.59 | 343.41 | -6.82 | 362.63 | 126.00 | 227.29 | 16.15 | 95.27 | 0.069 | 0.0777 | 0.0738 | 0.0664 |
| Source: Data collected from bank web sites and Computed based on report on currency and finance (2001-12) (RBI). | | | | | | | | | 0.0659 | 0.0778 | 0.0769 | 0.0674 |
| | | | | | | | | Average= | 0.066 | 0.070 | 0.071 | 0.070 |
| | | | | | | | | Growth = | -10.46 | -4.774 | 0.919 | -10.13 |

**Income per Employee:** Difference ratios have been used so far for assessing the performance in terms of cost or returns as proportion to total earning assets, whereby productivity of the labour could not be measured directly. Income per employee of Public sector banks has constantly increasing year by year from the period 2001-02 to 2011-12 with the ratio of 0.1623 to 0.5609 respectively of State bank of India. Andhra bank ratio varied with the ratio of 0.1822 to 0.8079 from the period 2001-02 to 2011-12 respectively. Axis bank ratio varied from the ratio of 0.9270 to 0.8638 from the period 2001-02 to 2011-12. ICICI bank ratio varies from the ratio 0.3548 to 1.6414 from the period of 2001-02 to 2011-12.

**Income per Branch:** Public sector banks have the uptrend from the beginning, these are SBI varies with the ratio of 3.7359 to 8.4432 from the period 2001-02 to 2011-12. Andhra bank varies with the ratio of 2.1771 to 7.1254 from the period 2001-02 to 2011-12. Private sector banks are Axis bank and ICICI bank varies the ratio of 14.2446 to 16.5449 and 7.6356 to 14.9103 respectively. Incomes per branch for all banks have risen steadily for the banking industry for all groups since the early years. It is could be an expansions of new business, evolutions of new business strategies (ATMs and utilization of new technology with cost and benefit) and rationalisation of branches by some banks.

Table:4 Diversification ratio

| Non-Interest Income to Total Income ratio (%) | | | | |
|---|---|---|---|---|
| Public Sector Banks | | | Private Sector Banks | |
| Year | SBI | ABN | AXIS | ICICI |
| 1999-00 | 0.1385 | 0.1389 | 0.1587 | 0.1854 |
| 2000-01 | 0.1293 | 0.0984 | 0.1549 | 0.1507 |
| 2001-02 | 0.1233 | 0.1303 | 0.2607 | 0.215 |
| 2002-03 | 0.156 | 0.2157 | 0.2186 | 0.2522 |
| 2003-04 | 0.1999 | 0.2346 | 0.2514 | 0.2563 |
| 2004-05 | 0.18 | 0.2489 | 0.1734 | 0.2663 |
| 2005-06 | 0.1711 | 0.1462 | 0.1981 | 0.2676 |
| 2006-07 | 0.1587 | 0.1361 | 0.1778 | 0.2324 |
| 2007-08 | 0.1611 | 0.1336 | 0.1999 | 0.2238 |
| 2008-09 | 0.1659 | 0.1247 | 0.211 | 0.207 |
| 2009-10 | 0.1741 | 0.1315 | 0.2532 | 0.221 |
| 2010-11 | 0.155 | 0.0976 | 0.2341 | 0.2149 |
| 2011-12 | 0.1187 | 0.0705 | 0.1977 | 0.1908 |
| 2012-13 | 0.1182 | 0.075 | 0.1942 | 0.1724 |
| Average = | 0.1536 | 0.1416 | 0.2060 | 0.2183 |
| Growth = | -14.6570 | -46.0043 | 22.3693 | -7.0119 |

**Non- Interest Income to total income ratio**: The ratio of other operating income to total income cannot be classified as an accounting measure for each se; it has been used to indicate the rising importance of other sources of income such as off- balance sheet exposures and non- old-style source of income such as fee and commission. Non- Interest Income to total income ratio for all banks are fluctuating and their ratios are SBI varies from the beginning 0.1385 to 0.1182 from the years 1999-00 to 2012-13. And Andhra bank varies in the year 1999-00 to 2012-13 with the ratio 0.1389 to 0.0750. And ICICI bank varies with the ratio of 0.1854 to 0.1724 in the years 1999-00 to 2012-13. Axis bank varies from 0.1587 to 0.1942 in the years 1999-00 to 2012-13. Both public and private sector banks have same trend i.e. all banks in the middle of the study period have uptrend later these are in down trend, finally these are in decreasing trend.

**Findings:**
It was observed that the public sector banks like State bank of India and Andhra bank operational efficiency ratios are operating cost to total asset ratios 0.080 and 0.083, and cost to income ratios are 0.91 and 0.84 and non- labour cost to total asset ratios are 0.066 and 0.070 respectively, these cost are higher than the private sector banks like Axis bank and ICICI banks have operational cost to total asset ratios are 0.076and 0.074, cost to income ratio are 0.86 and 0.87 and labour cost to total asset ratio are 0.071 and 0.070 respectively. It indicates lower the cost higher the efficiency of banks.

It was witnessed that the public sector banks; State bank of India and Andhra bank productivity ratios position are income per employee is 0.300 and 0.375 and income per branch is 5.413 and 3.701, labour cost per unit earning asset ratio is 0.014 and 0.012 respectively, these productivity cost are high and income per branch and employee is less when compared to the private sector banks is 0.685 and 0.962, income per branch is 13.204 and 24.916 and labour cost per unit of earning asset is 0.0052 and 0.0047 respectively. Private sector banks have higher productivity in the form of usage of employee and other scares resources. It is good for the both sector banks from the initial period the income for employee and income per branch was increased.

Profitability position of public sector banks are return on asset ratio is 0.008 and 0.012, return on equity ratio is 0.154 and 1.346 respectively, these ratios are lesser than the private sector banks, which are return on equity is 3.776 and 3.164 and return on asset ratio is 0.11 and 0.11 respectively for Axis bank and ICICI bank.

Net interest margin ratio of ICICI bank and Axis banks are 0.018 and 0.021 are lesser than the public sector banks 0.027 and 0.028 respectively, lesser the ratio higher the efficiency, Non- Interest income to total income ratio of private sector banks are 0.218 and 0.208 higher than the public sector banks 0.142 and 0.154 respectively, thus high ratio indicate higher the efficiency of banks.

From the above findings the public sector banks have relatively poor performance than the private sector banks in the form of operational efficiency, productivity, profitability and diversification ratios.

**Suggestions:**
The performance of the public sector banks are degraded in terms of controlling of operational cost in the initial years later it has been significantly declined last few years, and it was achieved through the cutting of cost and utilization of resources with competitive environment.

Public sector banks should be control the labour cost, it occupy large portion of operating cost to income ratio. It should be decreased through implementation of the employee voluntary retirement scheme for the aged people.

Profitability of bank could be achieved through increasing services in the form of non-interest income sources like fee, commission and discounts.

The public sector banks should increase the business income and non-business income by implementing new strategies like new technology services, and speedy recovery of accounts receivables, collection of long term dues and bad and doubtful debts through appointing of collection agents and consultancies.

Income per employee and income per branch of public sector banks should be increased through assigning the business targets to the branch and employee attracting the special schemes to the customers when competing with the private sector banks.

Net-Interest margin should be increased through identifying the potential industry customers which are investing in to venture activities, facilitating advances to working capital necessities which generate high interest and certain payments.

The public and private sector banks are significantly increasing in the return on equity and return on assets, it is good for the industry and environment, stake holders and shareholders getting other benefits and business.

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