

“BANK OF INDIA” DATA SERIES: 2005-2016 MEASURING PERFORMANCE BY USING INTANGIBLES

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ABSTRACT

This research paper is using Panel data spread over twelve years from 2005 to 2016 and 29 indicators of the bank, are used for the purpose. The initial discussion relating to the significance of measurement of intangible assets and integration of contingencies in performance evaluation establish the need to design a comprehensive performance evaluation system for the Indian banks. It is found that being a part of the service sector, long-term strategic planning in a bank needs to concentrate on such a system. However, implementing this technique becomes complicated due to the difficulties in measurement of the intangible assets, existence of the interrelations among these indicators, differences in the significance assigned to various indicators within the organization and trouble in setting the linkages between the employee performance and the reward mechanism. Paper evaluates the significance of intangible aspects as a tool for performance measurement in the Indian banking sector, with a special focus on one of the oldest, largest and the widely spread bank – Bank of India. This is done by constructing a Balanced Scorecard for the bank, and then evaluating the performance of the bank through this BSC.

METHODOLOGY OF THE PAPER

How can indicators other than the net profit and the growth rate in it, point towards the performance of a bank? Especially, when measurement of intangible indicators appears to be difficult? However, several seemingly financial indicators also point towards the performance of intangible assets of a bank. For instance, growth rate of deposits is a significant indicator of customer confidence in the bank. Similarly, growth rate of credit / advances is a significant indicator of customer preference for the services of a specific bank. The significance of such ratios and indicators is recognized by the Reserve Bank of India, and that is the reason behind the definition of many such ratios for the commercial banks in India. However, not many banks make an attempt

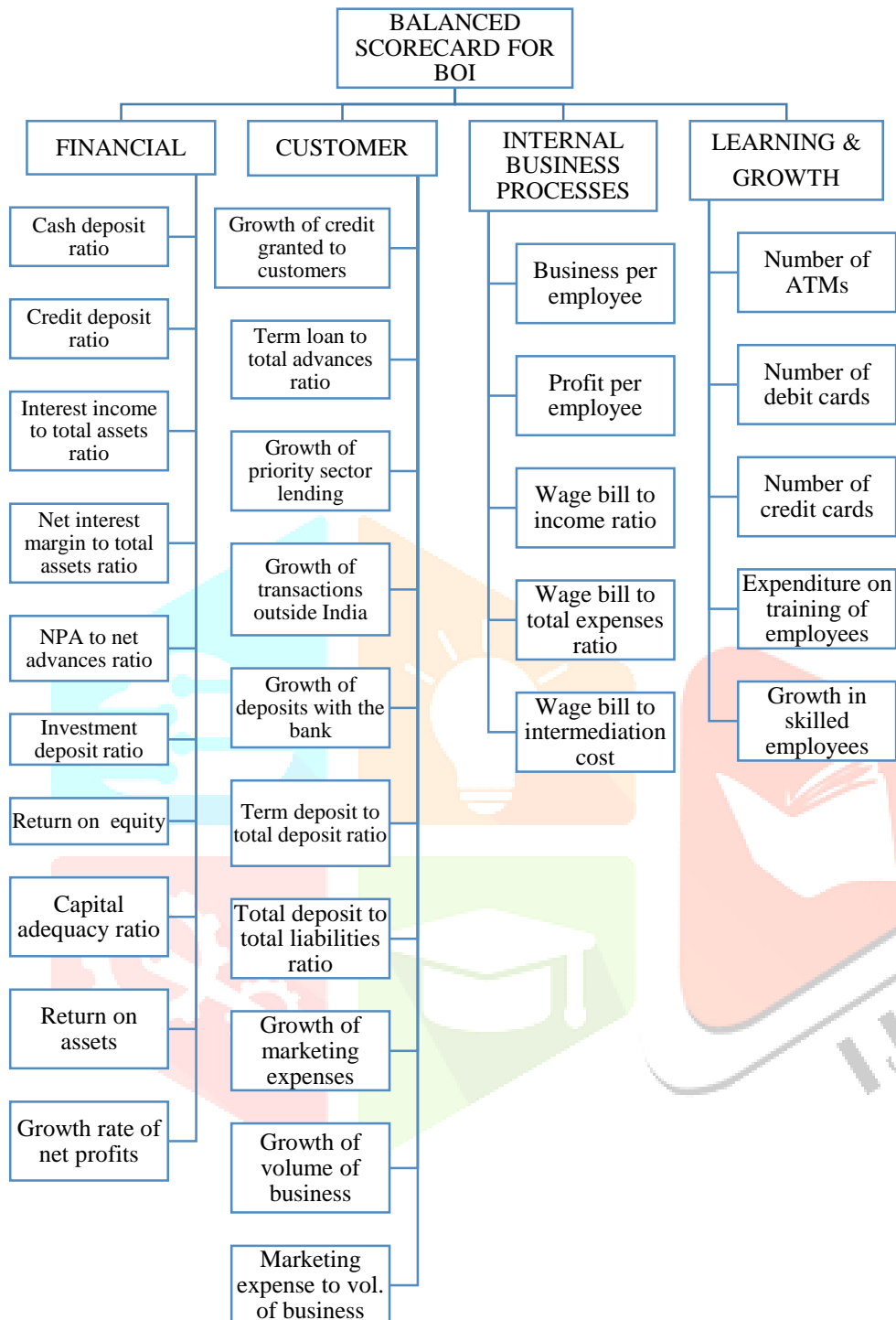
to analyze the underpinnings of such ratios and utilize the trend observations to evaluate their own performance. Majority of the banks use growth rate of the net profits as the sole indicator of the health of their organization. Of course this has changed lately, especially after implementation of Basel norms regarding the capital adequacy. Since 2014, when the Basel Accord I was implemented by the RBI for Indian commercial banks, the banks have started utilizing capital adequacy ratio as another major indicator of the financial health of the organization. Many more financial indicators can be utilized for the purpose. Moreover, customer behavior can also be analyzed by using certain apparently financial indicators, as mentioned above. Performance of a bank like State Bank of India can be evaluated in a much more effective manner by using such indicators. This helps in understanding questions like:

- Why does a bank report certain type of financial position, e.g., low/high growth in profit?
- Why has a bank been able to achieve sufficient capital adequacy norms?
- Why does a bank seem to focus more on satisfying customers, at the cost of profits?
- Why does a bank continue to operate in apparently non-profit making products?
- ... And so on

BALANCED SCORECARD MODEL

Answering the questions mentioned in the earlier section, a model Balanced Scorecard is designed, using the data collected by the Reserve Bank of India. These data series appear to reflect only the financial performance of a banking organization at a first glance. But a more careful analysis reveals that the same data reflect non-financial performance of the bank.

DIAGRAM 3: BSC FOR BANK OF INDIA



This dual utility and the ease in the measurement of these data render the data extremely useful for analysis through the advanced techniques such as the Balanced Scorecard. This also enables development of the overall business strategy of the bank in the long-term as well as defining the short-term objectives to be realized in a stipulated time period. Whether the objectives have been realized or not, and to what extent they have been

realized, can be measured by using the performance indicators classified into four categories as per the four perspectives of the BSC. Comparing the past performance with the predefined objectives of the bank helps in knowing whether the growth strategy of the bank has been successful or not, and which new initiatives are required to realize the objectives in the future. Diagram 3 represents various indicators to be used in the Balanced Scorecard for State Bank of India. Panel data, presented in annexure one, involving 12 years' time series from 2005 to 2016 and spread across all these indicators are used here. Although in case of a few indicators, the data series are not complete, as the past data are not available. Preliminary analysis based on the graphical presentation of each perspective reflects absolute changes and a high degree of volatility in all the indicators, which is not sufficient to know whether the bank performance is consistent or not. This is because; all commercial banks may have gone through a similar phase of volatility during a specific year. To solve this, econometric analysis involving z-test for the mean difference between two samples is presented. Here, the mean of each indicator for each bank is compared with the mean value of the respective indicator for all commercial banks; and the null hypothesis that the mean difference is zero, against the alternative that the mean difference is greater than zero; is tested at 95 per cent level of significance.

INDICATORS

Though BOI is also a public sector bank, its performance indicators show quite different results as compared to the SBI. This is evident from the analysis of data presented in table 4.2.

Financial Perspective:

Table 4.2a indicates that the cash-deposit ratio is relatively lower as compared to the aggregate for all commercial banks, and it has decreased continuously after reaching the peak level of 8.19 in 2007 till the year 2013. The bank has been successful in reducing its cash along with the declining cash reserve requirements as guided by the RBI, meaning that majority of the deposits are converted into the form of credit. This is evident from the increasing amount of credit-deposit ratio. Moreover, the ratio for BOI is significantly higher than the aggregate of all commercial banks. The credit-deposit ratio increased from 57.35 in 2005 to the peak level of 70.64 in 2016. It has maintained an average of 63.66 against the average of 59.97 for all commercial banks. Not only that, but this ratio is much better as compared to the SBI, which is only 56.49. This is the result of

competitive interest rate structure and customer friendly approach of the bank, including opening of specialized branches.



TABLE 4.2a: FINANCIAL PERSPECTIVE – BOI

	Cash-deposit ratio	Credit-deposit ratio	Ratio of interest income to total assets	Ratio of net interest margin to total assets	Ratio of net NPA to net advances	Investment-deposit ratio	Return on equity	Capital adequacy ratio	Return on assets	Growth rate of net profits
Mean	6.62	63.65583	8.203333	2.698333333	4.8225	34.3275	16.0608	11.27167	0.81	32.26074
Known Variance	1.184	52.989	0.808	0.045	6.832	9.762	45.835	1.277	0.141	3365.11
Observations	12	12	12	12	12	12	12	12	12	11
Mean Difference	0	0	0	0	0	0	0	0	0	0
z	-2.61136	1.12892	-0.03936	-3.531412789	0.33059915	-2.985569	-9.77579	-1.737641	-0.17	0.170268
P(Z<=z) one-tail	0.004509	0.129466	0.484302	0.000206673	0.37047364	0.0014153	0	0.041137	0.43252	0.4324
z Critical one-tail	1.644854	1.644854	1.644854	1.644853627	1.64485363	1.6448536	1.64485	1.644854	1.64485	1.644854
P(Z<=z) two-tail	0.009018	0.258932	0.968605	0.000413346	0.74094729	0.0028305	0	0.082274	0.86504	0.864799
z Critical two-tail	1.959964	1.959964	1.959964	1.959963985	1.95996398	1.959964	1.95996	1.959964	1.95996	1.959964

TABLE 4.2b: CUSTOMER PERSPECTIVE – BOI

	Growth rate of total credit	Ratio of term loan to total advances	Ratio of priority sector advances to total advances	Transactions outside India	Growth in total deposits	Ratio of term deposits to total deposits	Ratio of deposits to total liabilities	Marketing expenses	Growth in volume of business	Marketing expenses to volume of business
Mean	18.3651	38.81188	28.79636	2669399.75	15.297208	65.125833	84.8161	1160.417	16.4647	0.008208
Known Variance	89.285	80.217	26.378	2.6E+12	53.934	13.044	2.686	1608970	57.229	0.000024
Observations	11	12	11	12	11	12	12	12	11	12
Mean Difference	0	0	0	0	0	0	0	0	0	0
z	-0.93008	-1.48524	-2.25006	5.353147377	-0.9568247	2.1733191	8.45348	1.163481	-1.0667	-8758.205
P(Z<=z) one-tail	0.176165	0.068741	0.012223	4.32187E-08	0.16932786	0.0148782	0	0.122317	0.14304	0
z Critical one-tail	1.644854	1.644854	1.644854	1.644853627	1.64485363	1.6448536	1.64485	1.644854	1.64485	1.644854
P(Z<=z) two-tail	0.35233	0.137481	0.024445	8.64374E-08	0.33865572	0.0297563	0	0.244634	0.28609	0
z Critical two-tail	1.959964	1.959964	1.959964	1.959963985	1.95996398	1.959964	1.95996	1.959964	1.95996	1.959964

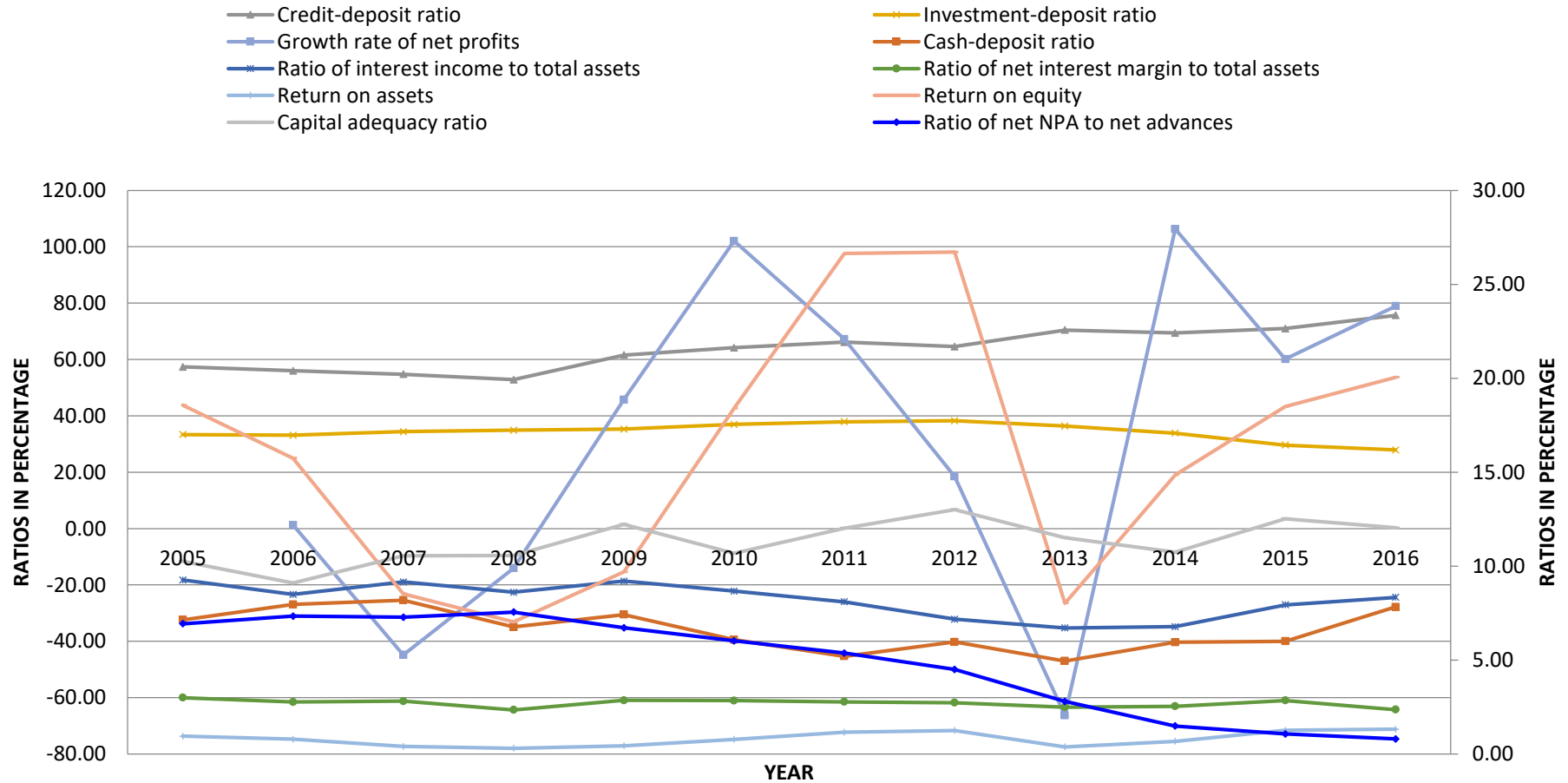
TABLE 4.2c: INTERNAL BUSINESS PROCESSES – BOI

	Business per employee	Profit per employee	Ratio of wage bills to total income	Ratio of wage bills to total expense	Ratio of wage bills to intermediate cost
Mean	297.932	1.775	16.19017	19.9588738	67.4113352
Known Variance	24143.5	2.253	9.638	10.862	25.419
Observations	10	10	12	12	12
Mean Difference	0	0	0	0	0
z	0.412829	-0.09397	0.967025	1.269884282	2.21299124
P(Z<=z) one-tail	0.339866	0.462567	0.166766	0.102062926	0.01344912
z Critical one-tail	1.644854	1.644854	1.644854	1.644853627	1.64485363
P(Z<=z) two-tail	0.679732	0.925134	0.333532	0.204125853	0.02689825
z Critical two-tail	1.959964	1.959964	1.959964	1.959963985	1.95996398

TABLE 4.2d: LEARNING & GROWTH PERSPECTIVE – BOI

YEAR	Number of atms	Number of Debit cards	Number of credit cards		Expenditure on training of employees	Number of skilled employees
2005						
2006				Mean	116613.833	4.9477023
2007				Known Variance	870000000	49.611
2008	23		1.2	Observations	12	6
2009	23		1.3	Mean Difference	0	0
2010	56		1.69	z	9.61597875	0.2945963
2011	221		1.38	P(Z<=z) one-tail	0	0.3841512
2012	250	0.68	2	z Critical one-tail	1.64485363	1.6448536
2013	263	5.5	1.4	P(Z<=z) two-tail	0	0.7683023
2014	315	11	1.67	z Critical two-tail	1.95996398	1.959964
2015	337	15.25	1.42			
2016	435	23	1.55			

CHART 4.5 BOI ON FINANCIAL PERSPECTIVE



Interest income, which forms a crucial part of total earnings of any bank, does not show very impressive results. Interest income as a proportion of total assets has decreased continuously from 9.26 in 2005 to 6.71 in 2013, which is alarming. This decline can be due to decreasing credit growth and significant decline in the interest rates on credit provided that the expansion of credit is inelastic with reference to the lending rates. Such inelastic relation between credit and lending rate implies that a decline in the lending rate causes less than proportionate expansion of credit, and hence, interest income does not increase at a fast speed. However, the interest income increased between 2005 and 2016, which is due to the increased volatility in the capital markets and people's preference for safe avenues of financial investment.

The ratio of net interest margin to total assets has also decreased continuously from 3.00 in 2005 to 2.36 in 2016, which is significantly below the average of all commercial banks. This indicates that the interest expenditure has been high and increasing as compared to interest earnings. Considering that public sector banks charge relatively lower interest rates, and the obligation of priority sector lending, such a trend is not inevitable. Further, high NPAs can be one more reason behind insignificant interest earnings of the bank. Data on the ratio of net NPA to net advances support this notion strongly. The ratio has been quite high, with an average of 4.82, which is even slightly higher than the average 4.46 for all commercial banks, although the difference is not significant. Interestingly, the ratio has increased initially from 6.93 in 2005 to 7.55 in 2008 and then it declined at a fast speed to 0.8 by 2016. This is a good sign, but the bank has to ensure that this low level of NPAs is maintained in the future. Only such performance can lead to improvement in the interest income to total asset ratio as well as profitability of the bank.

The declining cash-deposit ratio may also lead to increase in investment-deposit ratio, but in case of BOI, this is not so. This ratio has almost remained stable and hovered around an average of 34.33, with a relatively lower variance of 3.76. This is significantly lower than the average of all commercial banks, which is 37.366 with a much higher variance of 8.06. This implies that the bank has utilized its excess cash for creating more credit rather than opting for investment in open market, which is in line with the basic objectives of any banking organization. This is supported by increasing credit-deposit ratio figures. Another area of concern for BOI is the figures related to profitability. The trend in return on equity is highly volatile, declining initially from the high rate of 18.57 in 2005 to a low of 7.03 in 2008, and then increasing again to reach the peak of 26.71 in 2012. The very next financial year saw a plunge to 8.03,

again to rise to 20.05 by 2016. Further, the average return on equity is slightly higher, with a much greater variance compared to the average for all commercial banks, rendering it highly significant. On the other hand, the return on assets does not show very impressive results. This ratio is insignificant for BOI with a continuously declining trend up to 2013 and the mean value of 0.81, although the variance is much lower as compared to the variance in return on equity. This indicates that the profitability of the bank has not consistently improved over the last ten years.

This is very much clear from the trend line of growth rate of net profits, which shows equally high volatility. The data show that there have been years when the net profits of the bank actually declined along with some years when the bank registered high growth rate in net profits. The mean growth of profits is much lower than the average growth for all banks, and also shows much greater variance. This indicates that the bank has not performed very well on this crucial financial indicator. Again, the major reason behind such poor performance is high NPAs over the years. Finally, the bank seems to be doing little better as far as maintaining the capital adequacy ratio is concerned. The mean value of 11.27 is significantly lower than the mean of all commercial banks. Of course, this indicator has shown some volatility, but it is much more consistent and has remained around 11 per cent, which is higher than the current RBI norm of nine per cent. Thus, the bank may aim at maintaining its present capital base to meet any future contingency.

A. Customer Perspective:

Charts 4.6a and 4.6b indicate performance of BOI as far as customer perspective is concerned. The charts show that the performance of the bank has been quite erratic for four ratios: growth rates of total credit, total deposits, volume of business and the ratio of marketing expenses to volume of business. Table 4.2b shows that the growth rate of total credit is lower than the average growth rate of credit in banking sector, although the difference is not significant. Moreover, the variance is much greater. The growth rate varies between the lowest value of 3.72 per cent per annum and the highest value of 33.32 per cent per annum over a period of 12 years. Additionally, there is no consistency in the variations, meaning that there are constant fluctuations and while the credit amount increases at a faster speed in one year, its growth rate slows down considerably in the next.

CHART 4.6a BOI ON CUSTOMER PERSPECTIVE

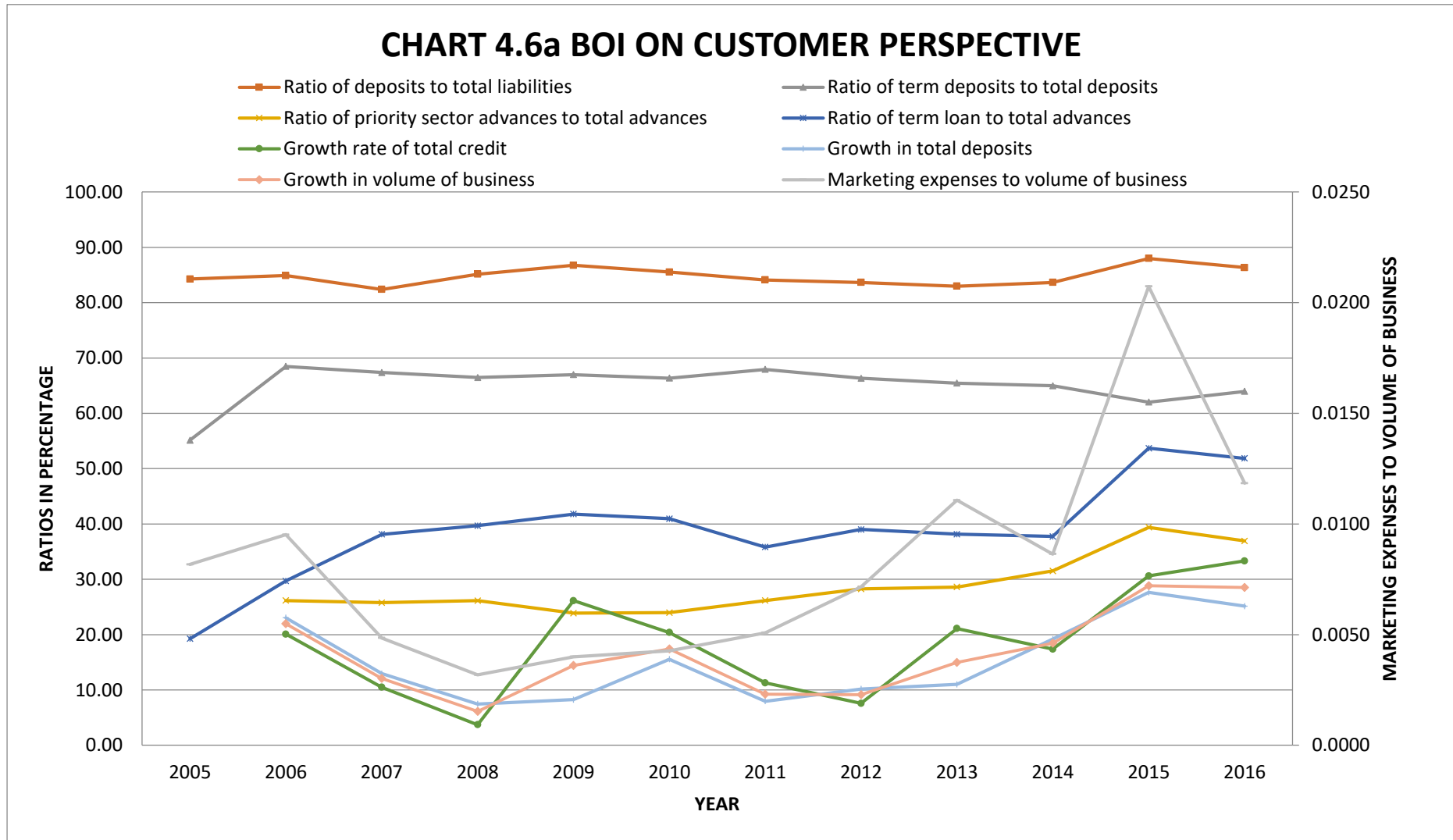
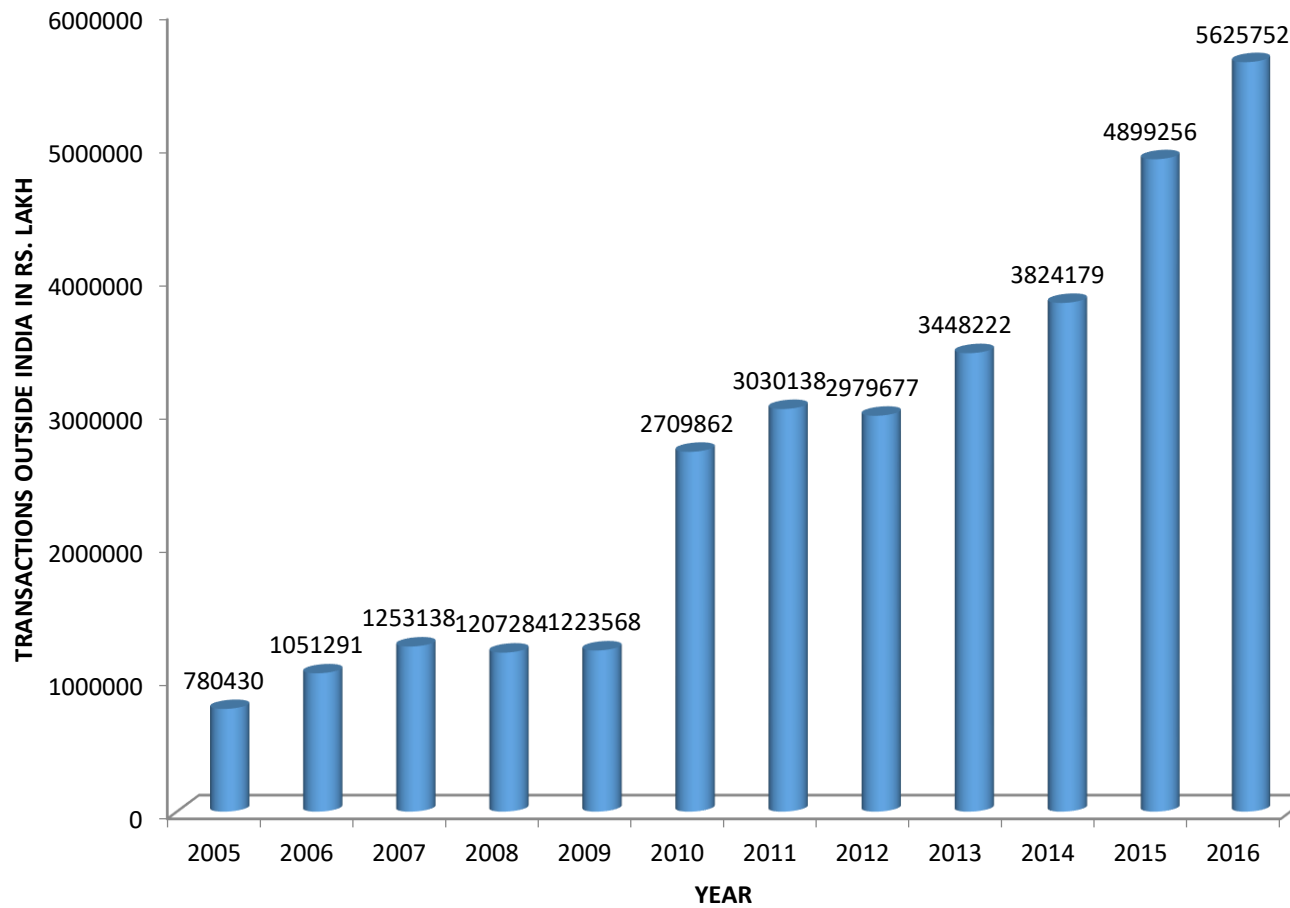


CHART 4.6b BOI ON CUSTOMER PERSPECTIVE

■ Transactions outside India (in Rs. lakh)



This implies an erratic performance and the bank needs to concentrate upon attaining stable and high growth rate of credit. The major causes behind such performance can be lack of aggression on part of the bankers to advance more credit and high NPAs resulting in over-cautious approach to credit advances. This notion is supported by the fact that the ratio of term loans to total advances has seen a considerable growth, although in between there was a little slump for four years. From a low rate of 19.24 in 2005 the ratio of term loans to total advances increased by more than double in 2009, when it was 41.79, and then further to 51.86 by 2016. The average proportion of term loans is 38.81 as compared to the aggregate of all banks, which is above 44, but in case of BOI the ratio shows lesser variance, which makes this ratio a significant indicator of the bank performance as far as long term credit creation is concerned.

Moreover, the ratio of priority sector advances to total advances is also less than the aggregate of all commercial banks, with a much greater variance. Hence with a mean value of 26.79 and the variance of 26.38, the priority sector advances gain significance as the performance indicator for BOI. This implies that the bank has performed more erratically in the area of short term advances, which renders greater fluctuations in the growth rate of total credit creation.

Transactions outside the country have seen a sudden spurt since 2010, when the figures increased by 121 per cent from Rs.1223568 lakh to Rs.2709862 lakh. The mean of transactions outside India is also much higher than the mean for all commercial banks. This implies that the significance of foreign transactions is positive and much greater for the BOI as compared to the other commercial banks. This is evident from the fact that the bank has made special efforts to spread its operations outside the country with 24 offshore branches. This is a positive step in the direction of carving out a niche in the global market for banking services.

However, to make a faster move in this direction, it is also necessary that the bank improves its profitability and expands its business in a consistent manner. On the liabilities side, the growth rate of total deposits shows much greater volatility with a lower mean value of 15.297 against the aggregate of 17.755 for all commercial banks. The growth rate has remained in the range of 7.46 and 27.626 per cent per annum. This is primarily due to lower interest rates offered by the bank against the higher rates of return in the open market, as well as lethargic approach towards deposit mobilization. However, much of the problem is once again from the segment of short term deposits. This is evident from the fact that the ratio of term deposits to total deposits is significantly high with a mean value of 65.126 as compared to all commercial banks. Not only that this ratio is high, but after registering a large increase from 55.13 in 2005 to 68.48 in 2006, it has not decreased much till 2014. After this, the ratio has shown a declining trend, which should be a matter of concern for the bank. The major reason behind such a trend could be better yield from the money market investments and expectations of the customers that the long term interest rates may increase in future. Hence, they prefer to go for short term investments rather than lock their money in bank deposits at low interest returns for a long period of time. With a rise in liquidity in the economy and lower inflation, the interest rates may not increase for some time, and this may also have a negative impact on the ratio of term deposits to total deposits. However, greater security assurance in case of public sector banks may be one driving force which may halt this declining trend.

The liabilities of the bank are mainly consisting of the deposits. And the bank has steadily maintained very high ratio of total deposits to total liabilities, ranging between 82.40 and 88 with a mean value of 84.816, which is much higher than the

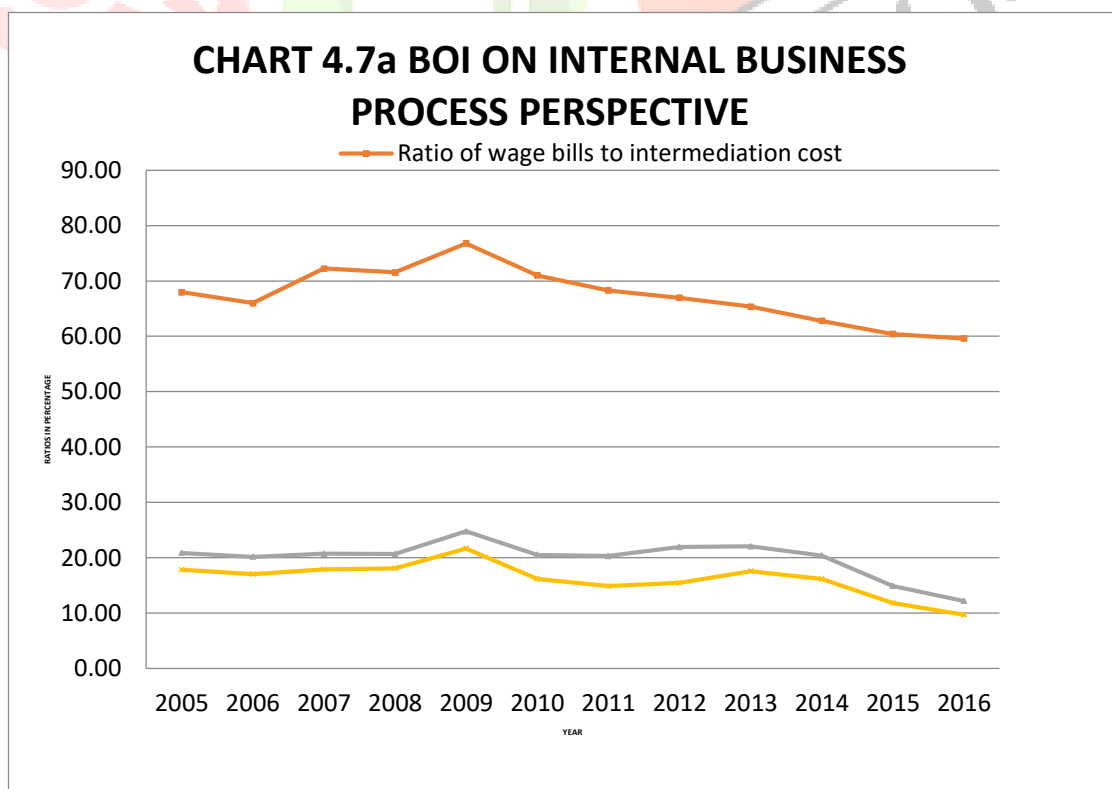
average for all commercial banks. With comparatively lower variance of 2.686, this ratio gains strong significance in the analysis. This implies that in spite of lower returns, depositors prefer a public sector bank for their investments. Further, being a nationalized bank, BOI still seems to prefer resource mobilization through the traditional means of banking, that is, through attracting more deposits, rather than raising funds from the open market. However, the lackluster approach towards banking operations is visible from lower growth in the volume of business. Starting with the high level of growth of almost 22 per cent in 2006, the volume of business reached its minimum level of 6.13 per cent in 2008, and picked up again. It registered highest growth of almost 29 per cent in 2015. In fact in the 12 year period, the trend has seen two troughs and three peaks, indicating that the volume of business is much more inconsistent as compared to the behavior of commercial banks in general. This is inevitable with wide fluctuations in credit creation and deposit mobilization.

This scenario can be improved by spending more on marketing the bank products and innovative services more efficiently. Though the bank spends more on an average as compared to commercial banks in general, the expenditure is not significantly different. This is because of a relatively high variance. That, much more can be done to reap benefits of effective marketing, is evident from the very erratic trend line of marketing expenses to volume of business. The mean value of the ratio for BOI is equal to 0.0082 against a much higher value of 0.0233 for commercial banks in general. This is a significant difference. With such a low volume of marketing expenses, the bank needs to embark upon a strategy of aggressive marketing, if it wants to expand its business at a faster pace. The bank seems to have realized this and the ratio has increased considerably since reaching the lowest level in the year 2008, but it is necessary to maintain this upward trend. Unless this is done, the bank

may not be able to withstand competition from private sector banks in spite of its infrastructural and historical advantages.

B. Internal Business Processes:

Chart 4.7a indicates the performance of BOI in relation to the wage bills of the bank on an annual basis. The bank seems to spend more on employees through the wages as compared to all commercial banks in general. The ratio of wage bills to total income indicates importance of expenditure on employees who bring revenue for the bank. This ratio has declined considerably over the last 12 years. Although initially the ratio increased from 17.84 in 2005 to 21.67 in 2009, it decreased to 9.67 by 2016. This is possible due to two reasons: one, the wage bills have not increased much because of control on new employment opportunities in nationalized banks and lower growth of wages of these employees; and two, bank revenue has increased at a faster speed. Focus on offering voluntary retirement scheme to reduce the burden of wage bills may have resulted in lower growth of wage bills as well. The the mean is relatively higher at 16.19, the ratio is not significant at 98 per cent confidence level.



It is also important to compare the share of wage bills in total expenditure by the bank as well as in the intermediation cost of the bank. The ratio of wage bills to total expenses has not changed much up to 2014. It was 20.86 in 2005 and increased to reach the peak of 24.76 in 2009, after which it declined to 20.4 in 2014. But after that, the ratio showed a major decline to reach the level of 12.2 in 2016. The mean value of 19.959 is marginally higher than that of all commercial banks and the variance is considerably higher, rendering the ratio highly significant at ten per cent level. This implies that the bank has been spending relatively lesser amount on the wages of employees as compared to other forms of expenses. This can be explained through the increasing expenditure on modernization and adoption of new technology like core banking and means of retail banking like ATMs, debit and credit card facilities as well as creation of infrastructure to support these changes. On the other hand, the ratio of wage bills to intermediation cost has shown greater decline, especially in the recent years. From the level of almost 68 in 2005, it increased initially to the highest level of 76.78 in 2009, and then steadily declined to 59.6 by 2016. This clearly shows that although wage bill is the single largest component in the variable cost of BOI, its share is declining. Still, the ratio is high with a mean value of 67.41 as compared to 62.4 for the commercial banks on an average, and this is quite significant.

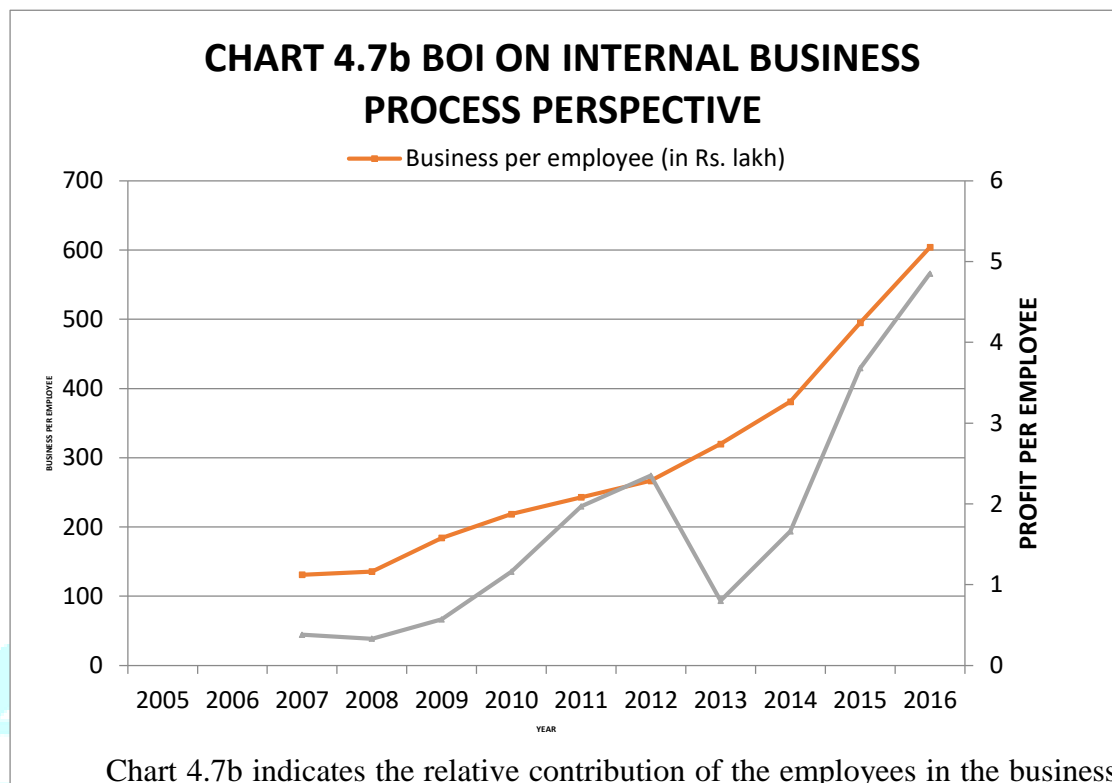


Chart 4.7b indicates the relative contribution of the employees in the business done by the bank. On one hand, business per employee has increased continuously from Rs.131 lakh in 2007 to Rs.604 lakh in 2016. This implies that the average productivity of employees of BOI has increased every year. Moreover, it is higher than the average productivity of bank employees in general. However, the difference is not quite significant. Contribution of the employees in profit is more erratic on the other hand as it is clear from the data on profit per employee. Although profit per employee has increased, the growth is not at all consistent. From a low value of Rs.0.38 lakh in 2007, profit per employee increased to the high level of Rs.2.35 lakh in 2012, but then it declined to Rs.0.80 lakh in 2013 and again increased to Rs.4.85 lakh by 2016. This is mainly due to the inconsistencies in the growth of profit as seen earlier in the financial perspective. Once again, this indicator is insignificant when the mean and variance are compared with the statistics of all commercial banks. Not only that, but profit per employee in BOI, with the mean value of Rs.1.775 lakh is

slightly lower than that of commercial banks in general, which has the mean value of Rs.1.83 lakh. This indicates that the bank needs to take measures to improve its profitability, by empowering its employees with better training and faster modernization.

C. Learning & Growth Perspective:

Chart 4.8a shows the progress achieved by BOI in the direction of modernization of banking operations and adoption of customer friendly technology. The bank seems to have started with introduction of ATMs and credit cards at the beginning of the 21st century, and progressed at a fast speed. While the number of ATMs increased from 23 in the year 2008 to 435 in 2016, the number of credit cards increased from 1.2 lakh to 1.55 lakh during the same period. However, the bank seems to have realized the importance of debit cards at a much later stage. Although, the expansion of debit cards has been much faster from 0.68 lakh in 2012 to 23 lakh in 2016, which is 34 times rise in a five years' time. Comparing this with the growth rate of credit cards, a conclusion can be drawn that either the bank has focused more on expansion of debit cards or customers prefer debit cards more to credit cards. This indicates that the psychology of both bankers and customers is to play cautiously when it comes to granting and accepting credit. This may be due to the high incidence of defaulting and higher interest involved in overdraft credit.

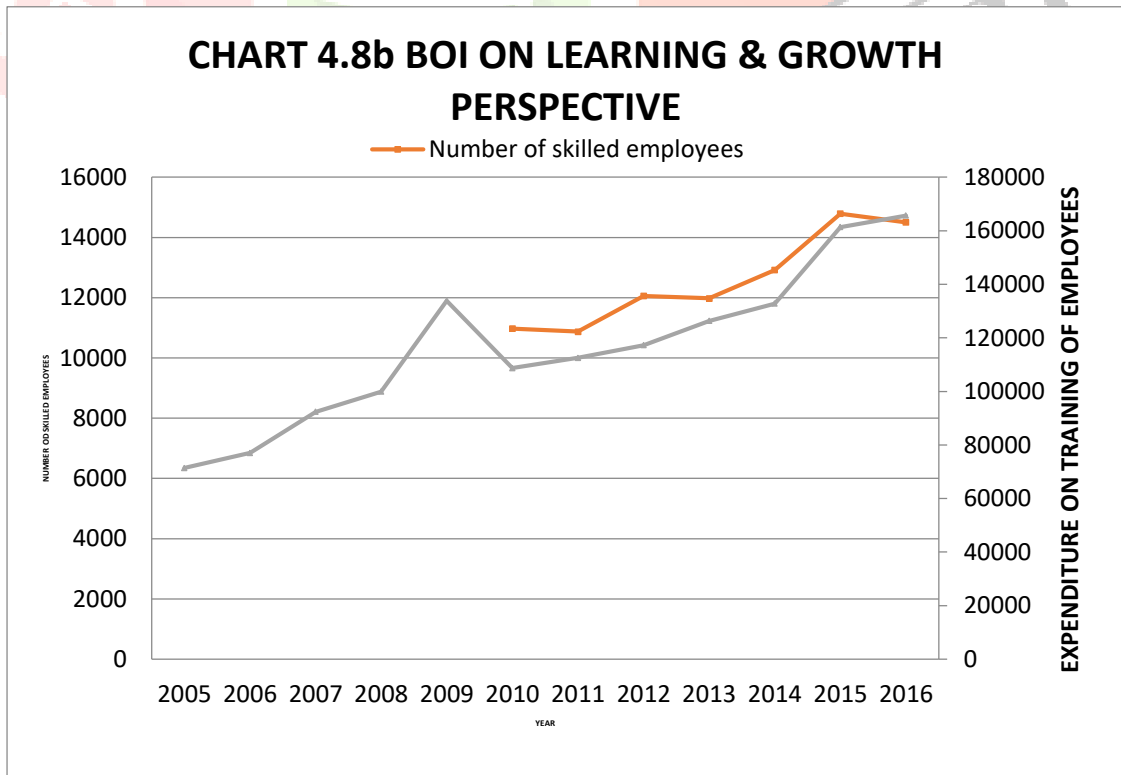
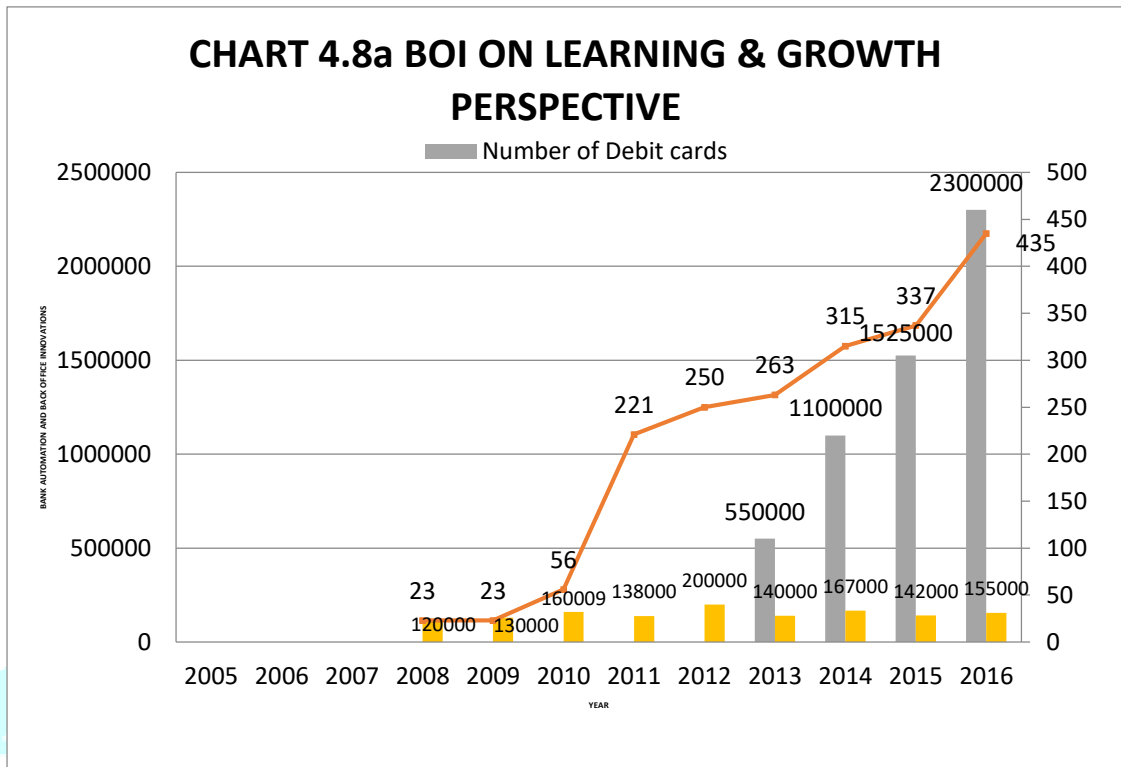


Chart 4.8b shows progress of the bank as far as skilled employees and expenditure on them is concerned. Expenditure on training of employees has increased considerably, and the mean value of Rs.116613.83 lakh is much higher than the mean value of Rs.21723.35 lakh for all commercial banks. Due to this considerable difference, the ratio is quite significant in spite of higher variance. However, the growth in the number of skilled employees is not significantly different from the average growth rate for all commercial banks. This is because although the growth rate is higher with a mean of 4.95 per cent for BOI, the variance is also very high at 49.61 as compared to the variance for all commercial banks, which is 38.26. This implies that though BOI is conscious about training its employees, the number of skilled employees has not increased much over the last five years. With the onslaught of more specialized banking services, the bank needs to concentrate on the employment of skilled officers and retaining them for a long period if it wants to withstand competition from private banks successfully. That the bank is making some efforts in this direction is evident from sharp increase in the number of officers during the last seven years from 10976 in 2010 to 14502 in 2016.

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