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CHAPTER-5
RESEARCH METHODOLOGY AND PROFILE OF REGIONAL RURAL BANKS IN GUJARAT

5.1 Introduction
This chapter describes the research methodology used for this study. It also gives a brief profile of three RRBs namely Baroda Gujarat Gramin Bank, Dena Gujarat Gramin Bank and Saurastra Gramin Bank in Gujarat.

5.2 Research problems
RRBs are important for rural development. The objectives of RRBs is to develop the rural economy in providing for the purpose of development of agriculture, trade, commerce, industry and other productive activities the rural areas, credit and other facilities, particularly, to the small and marginal farmers, agricultural labourers, artisans and small entrepreneurs and for matter connected therewith and incidental thereto. The establishment of RRBs for providing credit and other facilities for upliftment of weaker section in rural areas was ‘innovation in rural credit’.

As discussed earlier, since the inception of RRBs in 1975, especially during 1975-1990, known as inception and expansion phase, the spread of RRBs served well the purpose of financial inclusion.

A cross country study of the rural credit institutions threw up the important finding that, in the period 1988-1992 of all the institutions studied Regional Rural Banks in India incurred the lowest cost of administration, 8.1 % of the total portfolio(cited from Ramchandran and swaminathan)

As mentioned earlier, the reform phase (1991-2005) was a period of making RRBs economically viable as numbers of RRBs were incurring losses.

Based on the recommendation of Vyas Committee (2004) which is called consolidation phase/ post merger period the RRBs were restructured and the RRBs with one sponsored banks were merged together to form single RRB state wise of sponsor Bank. As discussed in literature review there have been numbers of studies related to performance of RRBs in pre and post merger period (Ibrahim, 2010), (Makandar N. M. 2010), (Ishwar, 2011), (Bhatia and Arpana, 2013).
There are also studies related to performance of RRBs for particular state e.g. for the state of Bihar (Himansu Shekhar, 1997), Andhra Pradesh (M.L.Narasaiah, 2003), Karnataka (Kalkundrikar, 1990), Bijapur district in Karnataka (Hundekar S.G. 2003), Orrissa (Mishra, 2009),

These studies pertain to study the performance of particular RRB in terms fulfilling the role of RRB in terms of Branch network, Deposit mobilization, Credit management and Financial Profitability. Most of the studies pertain to the period prior to year 2005, the pre-merger period.

Gujarat is one of the fastest industrially developed state with reasonably good base of Primary Co-operative Credit Societies in rural area. Only 9 RRBs were established with 3 sponsor Banks in Baroda and south Gujarat region (Baroda Gujarat Gramin Bank); North Gujarat region (Dena Gujarat Gramin Bank) and Saurashtra region (Saurashtra Gramin Bank). With reconstruction of RRBs the 9 RRBs are now merged in to 3 RRBs, one each with sponsor bank. The role of RRBs in Gujarat is very important as it provides credit to rural poor for productive and other allied purpose and thereby helps the rural economy to grow and reduce divide of rich and poor as well as help to keep the rural poor to get rid of clutches of non institutional credit. Therefore a need was felt to study on the performance of RRBs in Gujarat.

Accordingly the study is embodied as “A Study of Regional Rural Banks in Gujarat in Post merger period”. The Regional Rural Banks to be studied are (1) Baroda Gujarat Gramin Bank (2) Dena Gujarat Gramin Bank and (3) Saurashtra Gramin Bank. The various studies referred in literature review, most commonly assess the performance of RRBs in terms of:

A. Branch network, to cover the aspect of financial inclusion
B. Deposit mobilization
C. Credit facilities given, to know the C.D. Ratio, to assess the effectiveness of banking business as well as credit extended to rural poor.
D. Operational efficiency, and
E. Profitability, to know the financial viability of RRBs.

The researcher has used the frame work used by Hundekar (1995) as a base for the present study. He termed the study of performance of RRBs as study of ‘Productivity’. The aspects covered in productivity include (1) Branch network with eight ratios (2) Deposit mobilization with seven ratios (3) Credit management with nine ratios (4) Operational efficiency with seven ratios, and (5) Profitability analysis.
with nine ratios. For this study, based on the data availability from annual reports of RRBs in Gujarat some ratios are excluded.

The framework of the study adopted for this study is given separately in this chapter.

### 5.3 Research objectives

The objectives of the study are:

2. To make comparison of performance of these three RRBs of Gujarat.

### 5.4 Hypothesis

Based on various studies discussed in literature review the following hypotheses are formulated.

- **H1<sub>a0</sub>:** There is no significant change in branch expansion of BGGB.
- **H1<sub>a1</sub>:** There is significant change in branch expansion of BGGB.
- **H1<sub>b0</sub>:** There is no significant change in deposit mobilization of BGGB.
- **H1<sub>b1</sub>:** There is significant change in deposit mobilization of BGGB.
- **H1<sub>c0</sub>:** There is no significant change in credit management of BGGB.
- **H1<sub>c1</sub>:** There is significant change in credit management of BGGB.
- **H1<sub>d0</sub>:** There is no significant change in operational efficiency of BGGB.
- **H1<sub>d1</sub>:** There is significant change in operational efficiency of BGGB.
- **H1<sub>e0</sub>:** There is no significant change in profitability of BGGB.
- **H1<sub>e1</sub>:** There is significant change in profitability of BGGB.

- **H2<sub>a0</sub>:** There is no significant change in branch expansion of DGGB.
- **H2<sub>a1</sub>:** There is significant change in branch expansion of DGGB.
- **H2<sub>b0</sub>:** There is no significant change in deposit mobilization of DGGB.
- **H2<sub>b1</sub>:** There is significant change in deposit mobilization of DGGB.
- **H2<sub>c0</sub>:** There is no significant change in credit management of DGGB.
- **H2<sub>c1</sub>:** There is significant change in credit management of DGGB.
- **H2<sub>d0</sub>:** There is no significant change in operational efficiency of DGGB.
- **H2<sub>d1</sub>:** There is significant change in operational efficiency of DGGB.
- **H2<sub>e0</sub>:** There is no significant change in profitability of DGGB.
- **H2<sub>e1</sub>:** There is significant change in profitability of DGGB.
H3_00: There is no significant change in branch expansion of SGB.
H3_01: There is significant change in branch expansion of SGB.
H3_b0: There is no significant change in deposit mobilization of SGB.
H3_b1: There is significant change in deposit mobilization of SGB.
H3_c0: There is no significant change in credit management of SGB.
H3_c1: There is significant change in credit management of SGB.
H3_d0: There is no significant change in operational efficiency of SGB.
H3_d1: There is significant change in operational efficiency of SGB.
H3_e0: There is no significant change in profitability of SGB.
H3_e1: There is significant change in profitability of SGB.

H4_00: There is no significant difference in branch expansion of RRBs in Gujarat.
H4_01: There is significant difference in branch expansion of RRBs in Gujarat.
H4_b0: There is no significant difference in deposit mobilization of RRBs in Gujarat.
H4_b1: There is significant difference in deposit mobilization of RRBs in Gujarat.
H4_c0: There is no significant difference in credit management of RRBs in Gujarat.
H4_c1: There is significant difference in credit management of RRBs in Gujarat.
H4_d0: There is no significant difference in operational efficiency of RRBs in Gujarat.
H4_d1: There is significant difference in operational efficiency of RRBs in Gujarat.
H4_e0: There is no significant difference in profitability of RRBs in Gujarat.
H4_e1: There is significant difference in profitability of RRBs in Gujarat.

5.5 Frame work of the study

In the present study, the first approach of productivity use by Hundekar (1995) followed to analyze the performance and productivity of the Regional Rural Banks in Gujarat. The study aims at analyzing the performance of the Regional Rural Banks in Gujarat in terms of –

A. Branch network, to cover the aspect of financial inclusion
B. Deposit mobilization
C. Credit facilities given, to know the C.D. Ratio, to assess the effectiveness of banking business as well as credit extended to rural poor.
D. Operational efficiency, and
E. Profitability, to know the financial viability of RRBs.

The sets of indicators chosen for the present study to appraise the above are given in the following:–

A) Branch expansion policy in context to financial inclusion
   1) Market share index of branch expansion at state level.
   2) Ratio of rural and semi-urban branches to total branches of the Bank.
   3) Ratio of single branches in rural centers to total branches of the Bank.

B) Deposit mobilization
   1) Market share of the Bank in deposit mobilization at state level.
   2) Ratio of fixed deposit to total deposits.
   3) Ratio of savings deposit to total deposits.
   4) Ratio of current deposits to total deposits.
   5) Incidence of deposit per account (total deposits/ nos. of deposit account)

C) Credit management
   1) Market share index (Bank to all RRBs in the state).
   2) Credit deposit ratio.
   3) Recovery performance ratio.

D) Operational efficiency
   1) Spread burden and profit of the Bank.
   2) Burden coverage ratio of the Bank.
   3) Burden responsiveness.
   4) Man power cost responsiveness.
   5) Other cost responsiveness.
   6) Ancillary income responsiveness
   7) Operating cost responsiveness

E) Analysis of profitability of working fund
   1. Return on working funds
   2. Ratio of interest income to working funds
   3. Ratio of ancillary income to working funds
   4. Ratio of cash to working funds
   5. Ratio of accumulated profit to working funds
   6. Ratio of borrowed funds and deposits to working funds
   7. Ratio of interest expenses to working funds
   8. Ratio of man power expenses to working funds
9. Ratio of other operating expenses to working funds

The following parameters define the ratios used for the study.

**5.5.1 Branch expansion policy in context to financial inclusion**

1. **Market share index of branch expansion.**

   The market share of the particular RRB in relation to all RRBs in the state is measured by the ratio of total branches of the particular bank to the total branches of all RRBs in the state. It is the quantitative measure of particular bank performance in branch expansion. It indicates how far the particular bank has been giving proper direction and support in meeting the national objectives.

   \[
   \text{Market share Index} = \frac{\text{Total Branches of particular RRB}}{\text{Total branches of all RRBs in state}} \times 100
   \]

2. **Ratio of rural and semi-urban branches to total branches of the Bank.**

   Today, the banks in a country are motivated to go to more and more in rural areas. Despite this, some of banks may develop the attitude of opening branches in urban areas. The RRBs are meant for only rural areas, and to know whether the particular bank is rural biased or urban-biased, the ratio of rural and semi urban branches to total branches of particular bank is analyzed.

   \[
   \text{Ratio of Rural and semi urban branches to total branches of the bank} = \frac{\text{Rural} \ & \ \text{Semi urban branches}}{\text{Total branches of the bank}} \times 100
   \]

3. **Ratio of single branches in rural centers to total branches of the Bank.**

   The effectiveness of branch expansion policy of the bank may also evaluate on the basis of its performance in opening branches at the banked places or unbanked places. This can be judged by the ratio of single branches in rural centers to total branches of the bank. This ratio also throws light on innovative character of the bank in spreading banking habits at unbanked rural areas.

   \[
   \text{Ratio of single branch in rural centers to total branches of the bank} = \frac{\text{Single branches in rural center}}{\text{Total branches of the bank}} \times 100
   \]

**5.5.2 Deposit mobilization**

1. **Market share of the Bank in deposit mobilization at state level.**

   The market share of the particular bank in terms of deposit mobilization is analyzed in relation to all RRBs in the state. This ratio indicates the relative performance of the bank in terms of deposits mobilized in the state.
Market share Index = \( \frac{\text{Deposits mobilized by the bank}}{\text{Deposits mobilized by all RRBs in the state}} \times 100 \)

2. **Ratio of fixed deposits to total deposits.**
   The fixed deposits are expected to remain with banks for longer period of time and they can be employed in their usual loan operations. The pre dominance of fixed deposits implies high interest cost, less manpower cost, etc. Similarly, it affects the profitability of the bank. The high cost of fixed deposits gives signal to the bank to put these deposits to profitable use so that the return from deployment exceeds the cost of funds. The effective role of the bank in collecting fixed deposits is examined by the ratio of fixed deposits to total deposits of the bank.
   \[
   \text{Fixed deposits ratio} = \frac{\text{Fixed deposits}}{\text{Total deposits}} \times 100
   \]

3. **Ratio of savings deposits to total deposits.**
   The RRBs are expected to mobilize more and more small and scattered savings from interior villages by inculcating saving habit among the rural masses. A rural bank which is capable of making up the mind of the rural people to save more and more in the form of bank deposits may be said to be more effective in the sphere of rural deposit mobilization. The effectiveness of the bank in inculcating the saving habit is examined by the ratio of savings deposits to total deposits of the bank.
   \[
   \text{Saving deposits ratio} = \frac{\text{Savings deposits}}{\text{Total deposits}} \times 100
   \]

4. **Ratio of current deposits to total deposits.**
   The effective role of the bank in mobilizing deposits may also be appraised in terms of bank’s ability to collect deposits from traders, small businessman, artisans, etc. With this idea, the role of the bank in inculcating the saving habit among these people is examined by the ratio of current deposits to total deposits of the bank.
   \[
   \text{Current deposits ratio} = \frac{\text{Current deposits}}{\text{Total deposits}} \times 100
   \]

5. **Incidence of deposits per account**
   The incidence of deposits per account is derived by dividing the total deposits by the number of deposits accounts. Higher incidence shows more spread of
thrift among the masses. An increase in incidence of deposits may be due to two reasons:

i) Increase in the amount of deposits kept by the existing customers (this reflects that the bank has been able to provide to better customer services) and/or

ii) Increase in the number of account holders (this reflects that the bank has been able to attract new customers).

Generally, a bank which mobilizes more deposit amount from the existing customers is said to be more effective in terms of providing good customer services and vice-versa. Similarly, a bank which is capable of attracting more and more customers year by year is said to be effective in terms of market segment of development.

\[
\text{Incidence of deposits per account} = \frac{\text{Total deposits}}{\text{Number of deposits accounts}}
\]

5.5.3 Credit management

1. Market share index

The major objective of the RRBs is to develop the rural economy by providing credit and other facilities for agriculture, trade, industry and other productive activities in rural areas, particularly to the small and marginal farmers, agricultural labourers, artisans and small entrepreneurs.

RRBs are expected to act as development agent in rural areas. The basic concept development banking is that credit is consciously used as a lever of development. The effective role of a rural bank in the sphere of credit management can be evaluated in terms of market segment covered for meeting the credit requirements of rural masses. The market share of the bank in relation to all the RRBs in the state is measured by the ratio of total credit business of the bank to the total credit of all RRBs in the state. The ratio is achieved by-

\[
\text{Market share Index} = \frac{\text{Total credit of the bank}}{\text{Total credit of all RRBs in the state}} \times 100
\]

2. Credit deposit ratio

The ratio is obtained by dividing the total credit provided by the deposits mobilized. It indicates the extent to which the particular district or region or state has been benefited in the form of credit expansion out of deposits
generated from that district or region or state. In other words, it reflects immigration of funds to, or migration of deposits from, a particular district or region or state. Low credit deposit ratio indicates inability of the bank to make use the public deposits lying with it for the credit expansion. The reasons for this may be low profile of lending activities in that areas or flight of deposits to other areas or presence of idle funds or increase in deposits due to remittance from abroad or more stringent restrictions in respects of deposits imposed by the Central Bank in the form of Statutory Liquidity Ratio and Cash Reserve Ratio, etc. High credit deposit ratio reflects credit creation capabilities of the bank in relation to deposits. The main reason for high CDR may be the presence of finance facilities from higher financial institutions on liberal terms of or less, stringent restrictions in respects of deposits imposed by the Central Bank in the form of Statutory Liquidity Ratio and cash deposit ratio or flight of funds from other areas, etc.

Credit Deposit Ratio, no doubt, reflects over all position with regard to credit deployment but undue emphasis should not be placed on CDR as there are several factors influencing the ratio. For where deposit mobilization is large, CDR cannot improve despite large lending. This happens in some parts of the country where deposits accrue due to remittance from abroad. On the other hand, a low level of advances and still lower level deposits may appear large when expressed as ratio. This ratio carried out by-

\[ \text{CDR} = \frac{\text{Total credit of the bank}}{\text{Total deposits of the bank}} \times 100 \]

3. **Recovery performance ratio**

Recycling of funds at regular intervals is of vital importance to RRBs especially while considering their resource position and the influence on the cost of funds and profitability.

Mounting overdue are the by-products of poor recovery management. RRBs have been identified as instruments of rural socio economic transformation. Under national priorities, they are assigned with the onerous social responsibility of purveying credit to weaker section of the society. No doubt, they are conceived as rural development agencies through credit expansion. But the bank credit will have the highest correlation with the socio economic development only when bank credit is followed by timely recovery. Meeting
the social responsibility in terms of liberal landing to priority sector does not mean frittering away the depositors’ money as it will impinge upon the long term health and profitability of the bank. Recovery is an indirect indicator of not only the likely bad-debts but also of the management efficiency in terms of credit evaluation, specialized skills and follow-up. The ratio of recovery performance is arrived by dividing the total recovery of the bank by its total demand.

5.5.4 Operational efficiency

1. Spread burden and profit
   Spread, Burden and Profit technique signifies inter-relationship among each other. Spread is the excess of interest income over interest expenditure. Burden is the aggregate of manpower expense and other operating expenses as reduced by non interest income. Profit is the excess of Spread over Burden. The volume of bank business is expected to grow over a period of time resulting thereby a proportionate increase in the amount of spread, which in turn increases the amount of profit. If, in spite of increase in the volume of business and thereby spread, there is decrease in the profit, then it indicates poor overall operating profitability. The main reason for this may be higher rate of increase in burden than that in spread.

2. Burden coverage ratio
   The overall profitability of bank can also be viewed by burden coverage ratio. This ratio achieved by-
   \[
   \text{Burden coverage ratio} = \frac{\text{Spread}}{\text{Burden}} \times 100
   \]
   If the quotient of this ratio is 1, it implies the break even position of the bank. If it is more than 1, it indicates operational profitability. This situation enables the bank to plan for growth and diversification. If the quotient of this ratio is less than 1, it indicates poor profitability; it means inability of the bank to recover its operating cost fully.

3. Burden responsiveness
   Analysis of spread and burden in absolute terms may not provide meaningful results if the volume of bank business goes on expanding year by year. Burden is essentially operating cost but it is not expected move with the same speed at which the bank business is increasing. Because burden is neither cent percent
fixed over a period of time or cent per cent variable with the volume of business. In other words, it is semi fixed in nature. Hence, to what extent the burden is business sensitive can be known by establishing a meaningful relationship between percentage variation in burden and percentage variation in bank business. This responsiveness of burden as a result of changes in the volume of bank business is called ‘Burden Responsiveness’. It is achieved by

\[
\text{Burden Responsiveness} = \frac{\text{Percentage variation in burden}}{\text{Percentage variation in the volume of business}}
\]

If the quotient of above measures is equal to 1, it indicates that burden is perfectly volume elastic. If it is more than 1, it indicates that the percentage increase in burden is far more than percentage increase in the volume of bank business meaning thereby that the burden is less cost effective. If it is less than 1, it indicates that the burden is more cost effective.

4. **Man power cost responsiveness**

This responsiveness signifies the degree of relationship between the percentage variation in manpower expenses and percentage variation in bank business. This responsiveness is achieved by-

\[
\text{Man power cost responsiveness} = \frac{\text{Percentage variation in man power expenses}}{\text{Percentage variation in the volume of business}}
\]

Man power expense at any bank are expected to grow by a marginal rate or gradually over a period of time because of advancement in salary, employment of additional staff, etc. but this cost component is not expected to move at the rate at which bank business is increasing. Therefore, the numerical value of this quotient will be less than 1, if the manpower is productive and more than 1, if the man power is less productive.

5. **Other cost responsiveness**

This responsiveness signifies the degree of the relationship between the percentage variation in other general management expenses and percentage variation in the bank business. Other cost responsiveness is achieved by –

\[
\text{Other cost responsiveness} = \frac{\text{Percentage variation in other general management expenses}}{\text{Percentage variation in the bank business}}
\]
General management expenses at any bank are expected to increase only by narrow margin year after year because they are generally semi fixed in nature. This cost component may witness an increase mainly because of increase in postage and stationary due to increase in the volume of business, etc. but normally it is not expected to move at the rate at which the bank business is increasing year by year. Therefore, the numerical value of this quotient will be less than 1, if the general management is productive and more than 1, if it is less productive.

6. Ancillary income responsiveness

Interest income and ancillary income constitute the main sources of operating income whereas interest expenses and non interest expenses are the main items of operating expenses. In India, interest received and interests paid are administered by the regulated interest rate structure. Hence, ‘the improvement in the profitability of banks considerably hinges on degree of productivity achieved by the banks through other measures’. Such as, increasing the cost effectiveness of manpower expenses and other expenses and increasing ancillary income by way of providing qualitative customer services. A high level of ancillary income is a pre requisite for improving bank’s profitability through good customer services. As a bank goes on increasing its scale of operation in terms of deposit and credit business, its ancillary income is expected to increase over a period of time. Hence, to know by what extent the bank has been able to augment its ancillary income component, a relationship is established between the percentage variation in ancillary income and percentage variation in the volume of business. Ancillary income responsiveness achieved by-

\[
\text{Ancillary income Responsiveness} = \frac{\text{Percentage variation in Ancillary income}}{\text{Percentage variation in the volume of business}}
\]

7. Operating cost responsiveness

The bank profitability is largely influenced by operating cost effectiveness which is measured by the degree of operating cost responsiveness. In context of regulated interest rate structure, the productivity of the bank has a greater bearing on profitability than the spread management.
Generally, the term productivity refers to the output per unit of input employed. It also signifies the relationship between result (output) and effort (input). At the bank level, operating earnings (interest income and ancillary income) are in the nature of output, whereas operating expenses (interest expenses, manpower expenses and other expenses) are in nature of input. Hence, the productivity of a bank may be evaluated by the operating cost responsiveness as measured by the proportionate change in operating cost in relation to proportionate change in operating earnings. The productivity of a bank is inversely related to the cost responsiveness. In other words, the high cost responsiveness results in lower productivity and vice-versa. This responsiveness is arrived by dividing percentage variation over the previous year in total operating expenses by percentage variation over the previous year in total operating earnings. If the percentage increase in operating cost is more than that in operating earnings over a period of time, the average cost per unit of output (earnings) increases. Conversely, if the percentage increases in operating cost is lower than that in operating earnings (output), the average cost per unit of output declines. In the former case, the profitability of the bank is likely to fall, while in the later case the profitability would improve.

\[
\text{Operating cost responsiveness} = \frac{\text{Percentage variation in total operating expenses}}{\text{Percentage variation in total operating earnings}}
\]

### 5.5.5 Analysis of profitability of working funds

1. **Return on working funds**

   The overall profitability of the working funds at the bank level is appraised with the help of return on working funds technique. As per this technique, the return is expressed as a percentage of total capital employed, i.e. working funds. This throws light on productivity of capital employed in the bank.

   \[
   \text{Return on Working funds} = \frac{\text{Profit}}{\text{Working funds}} \times 100
   \]

2. **Ratio of interest income to working funds**

   Interest income affects the spread, which, in turn, affects net profit. An increase in interest income improves the profitability of working funds. This ratio is achieved by-
Ratio of interest income to working funds = \frac{\text{Interest income}}{\text{Working funds}} \times 100

3. **Ratio of ancillary income to working funds**

Income from specialized services by the bank increases its total operating income and thereby the profitability of the working funds. This ratio is achieved by-

\[
\text{Ratio of ancillary income to working funds} = \frac{\text{Ancillary income}}{\text{Working funds}} \times 100
\]

4. **Ratio of cash to working funds**

A constant vigil on cash management is crucial for profitability of the banks. Cash is a sterile asset yielding no income and keeping an amount of cash in excess of what would be actually needed is very costly affair because the bank incurs the opportunity cost holding idle cash, besides the cost of protecting and insuring cash against loss. The ratio of cash to working funds is an indicator of the efficiency with which the bank management handles its most liquid asset.

\[
\text{Ratio of cash to working funds} = \frac{\text{Cash}}{\text{Working funds}} \times 100
\]

5. **Ratio of accumulated profit to working funds**

The term ‘accumulated profit’ refers to the cumulative amount of operating profit achieved by the bank over a period of time. If this accumulated profit goes on increasing with the progress of the period due to operating cost effectiveness, it results good sign, in the magnitude of working funds, which, in turn, good affects on bank’s profitability.

\[
\text{Ratio of accumulated profit} = \frac{\text{Accumulated profit}}{\text{Working funds}} \times 100
\]

6. **Ratio of borrowed funds and deposits to working funds**

If the borrowed funds and deposits constitute a lion’s share in the total working funds, then it indicates higher level of financial risk; which, in turn, affects interest expenses, spread and ultimately, the profitability of the bank.

\[
\text{Ratio of borrowed funds and deposits to working funds} = \frac{\text{Borrowed funds and deposits}}{\text{Working funds}} \times 100
\]
7. **Ratio of interest expenses to working funds**
   The magnitude of interest expenses in total operating cost is influenced by the compositional character of the structure of the working funds of the bank. If the structure of working funds of the bank is characterized by the preponderance of debt capital, its interest expenses and thereby the average cost of capital employed in the bank increase. This increased average capital cost (interest cost) affects the bank’s profitability.

   \[
   \text{Ratio of interest expenses to working funds} = \frac{\text{Interest expenses}}{\text{Working funds}} \times 100
   \]

8. **Ratio of manpower expenses to working funds**
   The magnitude of the manpower expenses incurred by the bank is fundamentally affected by the efficiency and effectiveness of manpower planning, development and utilization at the bank level. If the manpower expenses increase because of inefficiency of the human resources in the bank, it affects the magnitude of total operating cost and thereby net profit and profitability of the working funds.

   \[
   \text{Ratio of manpower expenses to working funds} = \frac{\text{Manpower expenses}}{\text{Working funds}} \times 100
   \]

9. **Ratio of other operating expenses to working funds**
   The magnitude of other operating expenses is influenced by the efficiency of the general bank management. If the general bank management is inefficient, then other operating cost would be cost-ineffective affecting thereby the magnitude of total operating cost. This, in turn, affects average operating cost per unit of capital employed and thereby affects the bank’s profitability.

   \[
   \text{Ratio of other operating expenses to working funds} = \frac{\text{Other operating expenses}}{\text{Working funds}} \times 100
   \]

**5.6 Scope of the study**
The study covers three Regional Rural banks in Gujarat. The period of study covers post merger period i.e. year ended 2006 to year ended 2013.

**5.7 Data collection**
The study is based on secondary data. The data from annual reports of RRBs are taken. The physical annual reports were collected from respective banks.
5.8 Data Analysis

The study intends to focus on the performance of the Regional Rural banks in Gujarat. The present study covers a period of eight years from 2006 to 2013. Year wise various ratios are computed for all three Regional Rural Banks. Also descriptive statistics is computed for the same. In order to test the hypothesis of the study, statistical techniques like trend analysis and ANOVA has been used. For trend analysis Mann Kendall test is applied to test the hypothesis. Analysis of variance enables to test for the significance of the difference among more than two sample means. As one of the assumption of Welch test statistic is homogeneity of variance of each group. To check the significance of more than two variances, we have used Levene’s test. Those parameter which is not satisfy the assumption of Welch, we may use alternative to Welch, Welch test.

**Mann-Kendall test for Trend:**

\[
\tau = \frac{S}{\binom{n}{2}},
\]

Where

\[
S = 2P - \binom{n}{2},
\]

Where P is the number of times that \( z_{t2} > z_{t1} \) for all \( t_1; t_2 = 1, \ldots, n \) such that \( t_2 > t_1 \). Thus \( \tau = 2\pi_c - 1 \); where \( \pi_c \) is the relative frequency of positive concordance, i.e., the proportion of time for which \( z_{t2} > z_{t1} \) when \( t_2 > t_1 \). Equivalently, the relative frequency of positive concordance is given by \( \pi_c = 0.5(\tau + 1) \).

Testing equality of variances of Banks with respect to different parameters:

Here we use Levene’s test for this purpose, as we have 3 banks. It tests null hypothesis that the variances of different parameters are equal in all \( (k > 2) \) banks. The hypothesis is:

\[
H_0: \sigma_1^2 = \sigma_2^2 = \ldots = \sigma_k^2
\]

Vs

\[
H_1: \sigma_i^2 \neq \sigma_j^2; \text{ for at least one pair } (i,j)
\]

The test statistic is
When we like to find significance difference between k (>2) means, came from independent populations. Then we use ANOVA test. It tests the hypothesis:

$H_0: \mu_1 = \mu_2 = \ldots = \mu_t$

Vs

$H_1: \mu_i \neq \mu_j$; for at least one pair (i,j)

Test Statistics:
Table-5.1

Table showing ANOVA test statistics

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>SSTR</td>
<td>t-1</td>
<td>MSTR</td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>SSE</td>
<td>N-t</td>
<td>MSE</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>SST</td>
<td>N-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where,

\[ SSTR = \sum n_j (\bar{x}_j - \bar{x})^2 \]
\[ MSTR = \frac{SSTR}{t-1} \]
\[ SSE = \sum \sum (x_{ij} - \bar{x}_j)^2 \]
\[ MSE = \frac{SSE}{N-t} \]
\[ SST = \sum \sum (x_{ij} - \bar{x}_j)^2 \]
\[ F = \frac{MSTR}{MSE} \]

**Welch Test**

In Welch (1947, 1951), he derived the approximate test for equality of means without the homogeneous variance assumption. i.e. whenever the assumption of homogeneity is not satisfied and we fail to use ANOVA, we can use this test. The statistic is given by

\[ F = \frac{MSTR}{MSE} \]
Post hoc test:

Tukey Test:
When using ANOVA we conclude that there is significance difference between different banks, and then which pair of bank is different. To study or compare pair wise means, Tukey suggested the test on his name with following formula:

\[
  t = \frac{M_i - M_j}{\sqrt{MS_w \left(\frac{1}{n_i} + \frac{1}{n_j}\right)}}
\]

Where, \( M = \) treatment/group mean

\( n = \) number per treatment/group
Tamhane Test:
When using Welch we conclude that there is significance difference between different bank, then which pair of bank is different. To study or compare pair wise means, Tamhane suggested the test on his name with following formula:

\[ R_{U,R,V} = \sqrt{F_{U,R,V}} \]  
where \( U = 1 - (1-e)^{1/t} \)

### 5.9 Profile of Regional Rural Banks in Gujarat

#### 5.9.1 Baroda Gujarat Gramin Bank

The central Government vide its notification No.F.No.1 (2) 2001/RRB dated September 12, 2005, in exercise of the powers conferred by sub section(1) of section 23A of the RRBs Act, 1976 (21 of 1976) and also in consultation with National Bank for Agriculture & Rural Development (NABARD), Government of Gujarat and Bank of Baroda, being the Sponsor Bank of Panchmahal-Vadodara Gramin Bank, Surat-Bharuch Gramin Bank and Valsad-Dangs Gramin Bank, in the public interest and in the interest of the development of the area served by aforesaid RRBs as also interest of said RRBs should be amalgamated in to single Regional Rural Bank and named as Baroda Gujarat Gramin Bank with its Head office at Bharuch w.e.f. September 12, 2005.

**Share Capital of BGGB**

The authorized share capital of the Bank is Rs. 5 crores. Paid up share capital is Rs. three crores in the ratio of 50:35:15 by the Central Government, Bank of Baroda and Government of Gujarat. The bank has share capital deposits of Rs. 2004.68 lakhs subscribed by the share holders in the ratio of 50:35:15 as on 31st March, 2013.

**Branch Network of BGGB**

Table-5.2
Table showing the Branch Network of the bank

<table>
<thead>
<tr>
<th>Year (31st March)</th>
<th>Total Branch</th>
<th>Rural Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>128</td>
<td>105</td>
</tr>
<tr>
<td>2007</td>
<td>127</td>
<td>104</td>
</tr>
<tr>
<td>2008</td>
<td>129</td>
<td>104</td>
</tr>
<tr>
<td>2009</td>
<td>132</td>
<td>105</td>
</tr>
<tr>
<td>2010</td>
<td>132</td>
<td>100</td>
</tr>
<tr>
<td>2011</td>
<td>134</td>
<td>100</td>
</tr>
<tr>
<td>2012</td>
<td>148</td>
<td>106</td>
</tr>
<tr>
<td>2013</td>
<td>151</td>
<td>109</td>
</tr>
</tbody>
</table>

Deposits of BGGB

Table-5.3
Table showing the Deposit mobilization of the bank.
(Amount in ‘000)

<table>
<thead>
<tr>
<th>Year (31st, March)</th>
<th>Deposits Rs.</th>
<th>Growth rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>6498945</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>7629936</td>
<td>17.40</td>
</tr>
<tr>
<td>2008</td>
<td>8556317</td>
<td>12.14</td>
</tr>
<tr>
<td>2009</td>
<td>10632171</td>
<td>24.26</td>
</tr>
<tr>
<td>2010</td>
<td>11580043</td>
<td>8.91</td>
</tr>
<tr>
<td>2011</td>
<td>13718829</td>
<td>18.46</td>
</tr>
<tr>
<td>2012</td>
<td>17218495</td>
<td>25.50</td>
</tr>
<tr>
<td>2013</td>
<td>19051767</td>
<td>10.64</td>
</tr>
</tbody>
</table>
Loan & Advances of BGGB

Table 5.4 shows the Loan and Advances of bank.

<table>
<thead>
<tr>
<th>Year (31st, March)</th>
<th>Loan &amp; Advances Rs.</th>
<th>Percentage variation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2637281</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>3395096</td>
<td>28.73</td>
</tr>
<tr>
<td>2008</td>
<td>4161239</td>
<td>22.56</td>
</tr>
<tr>
<td>2009</td>
<td>4323367</td>
<td>3.89</td>
</tr>
<tr>
<td>2010</td>
<td>4489408</td>
<td>3.84</td>
</tr>
<tr>
<td>2011</td>
<td>5086973</td>
<td>13.31</td>
</tr>
<tr>
<td>2012</td>
<td>6534903</td>
<td>28.46</td>
</tr>
<tr>
<td>2013</td>
<td>7335659</td>
<td>12.25</td>
</tr>
</tbody>
</table>

*% variation = current year/previous year*100-100

5.9.2 Dena Gujarat Gramin Bank

The Dena Gujarat Gramin Bank came into existence on September 12, 2005 following the Government of India notification F.No.1 (2) 2001/RRB dated September 12, 2005, published in part ii, section 3, sub section (ii) of the gazette of India extraordinary for publication, providing therein for amalgamation of the three Regional Rural Banks, namely Kutch Gramin Bank, Banaskantha-Mehsana Gramin Bank and Sabarkantha-Gandhinagar Gramin Bank established under the Regional Rural Bank Act 1976. The notification for amalgamation of the three Regional Rural Banks was put up in the first meeting of Board of Directors held on December 8, 2005 and the amalgamation was adopted by the Board of Directors taking notes that there has been no litigation/resistance from any interested party.

Share Capital of DGGB

The authorized share capital of the Bank is Rs. 5 crores. Paid up share capital is Rs. three crores in the ratio of 50:35:15 by the Central Government, Dena Bank and Government of Gujarat. The bank has share capital deposits of Rs. 5223.39 lakhs subscribed by the share holders in the ratio of 50:35:15 as on 31st March, 2013.
Branch Network of DGGB

The bank had branch network of 130 branches (2006) spread over six districts of Gujarat state namely Banaskantha, Gandhinagar, Kutch, Mehsana, Patan and Sabarkantha.

Table-5.5

The table 5.5 shows the Branch Network of bank

<table>
<thead>
<tr>
<th>Year (31st March)</th>
<th>Total Branch</th>
<th>Rural Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>130</td>
<td>102</td>
</tr>
<tr>
<td>2007</td>
<td>131</td>
<td>97</td>
</tr>
<tr>
<td>2008</td>
<td>142</td>
<td>98</td>
</tr>
<tr>
<td>2009</td>
<td>143</td>
<td>97</td>
</tr>
<tr>
<td>2010</td>
<td>143</td>
<td>97</td>
</tr>
<tr>
<td>2011</td>
<td>145</td>
<td>97</td>
</tr>
<tr>
<td>2012</td>
<td>159</td>
<td>111</td>
</tr>
<tr>
<td>2013</td>
<td>175</td>
<td>124</td>
</tr>
</tbody>
</table>

Deposits of DGGB

Table-5.6

Table 5.6 shows Deposit mobilization of bank.

(Amount in ‘000)

<table>
<thead>
<tr>
<th>Year (31st, March)</th>
<th>Deposits Rs.</th>
<th>Growth rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>7030560</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>8838527</td>
<td>25.71</td>
</tr>
<tr>
<td>2008</td>
<td>10668603</td>
<td>20.70</td>
</tr>
<tr>
<td>2009</td>
<td>13623018</td>
<td>27.69</td>
</tr>
<tr>
<td>2010</td>
<td>15712134</td>
<td>15.33</td>
</tr>
<tr>
<td>2011</td>
<td>18822238</td>
<td>19.79</td>
</tr>
<tr>
<td>2012</td>
<td>22721833</td>
<td>20.71</td>
</tr>
<tr>
<td>2013</td>
<td>25181248</td>
<td>10.82</td>
</tr>
</tbody>
</table>
Loan & Advances of DGGB

Table-5.7

Table 5.7 shows the Loan and Advances by bank.

(Amount in ‘000)

<table>
<thead>
<tr>
<th>Year (31st, March)</th>
<th>Loan &amp; Advances Rs.</th>
<th>Percentage variation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2868404</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>4311993</td>
<td>50.32</td>
</tr>
<tr>
<td>2008</td>
<td>5392518</td>
<td>25.05</td>
</tr>
<tr>
<td>2009</td>
<td>4805393</td>
<td>-10.88</td>
</tr>
<tr>
<td>2010</td>
<td>4635800</td>
<td>-3.52</td>
</tr>
<tr>
<td>2011</td>
<td>5237895</td>
<td>12.98</td>
</tr>
<tr>
<td>2012</td>
<td>8767267</td>
<td>67.38</td>
</tr>
<tr>
<td>2013</td>
<td>11097902</td>
<td>26.58</td>
</tr>
</tbody>
</table>

*% variation = current year/previous year*100-100

5.9.3 Saurashtra Gramin Bank³


Share Capital of SGB

The authorized share capital of the Bank is Rs. 5 crores. Paid up share capital is Rs three crores in the ratio of 50:35:15 by the Central Government, State Bank of India and Government of Gujarat. The bank has share capital deposits of Rs. 2153.43 lakhs subscribed by the share holders in the ratio of 50:35:15 as on 31st March, 2013.

Branch Network of SGB

The bank had branch network of 130 branches and 11 satellite branches (2006) spread over seven districts of Gujarat state namely Jamnagar, Rajkot, Surendranagar, Bhavnagar, Junagadh, Amreli and Porbandar.
## Table 5.8

**Table 5.8 shows Branch Network of bank**

<table>
<thead>
<tr>
<th>Year (31st March)</th>
<th>Total Branch</th>
<th>Rural Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>130</td>
<td>108</td>
</tr>
<tr>
<td>2007</td>
<td>131</td>
<td>108</td>
</tr>
<tr>
<td>2008</td>
<td>133</td>
<td>108</td>
</tr>
<tr>
<td>2009</td>
<td>141</td>
<td>108</td>
</tr>
<tr>
<td>2010</td>
<td>151</td>
<td>111</td>
</tr>
<tr>
<td>2011</td>
<td>167</td>
<td>119</td>
</tr>
<tr>
<td>2012</td>
<td>183</td>
<td>123</td>
</tr>
<tr>
<td>2013</td>
<td>203</td>
<td>127</td>
</tr>
</tbody>
</table>

## Deposits of SGB

## Table 5.9

**Table 5.9 shows Deposits mobilization of bank.**

(Amount in ‘000)

<table>
<thead>
<tr>
<th>Year (31st, March)</th>
<th>Deposits Rs.</th>
<th>Growth rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>5500916</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>6813200</td>
<td>23.85</td>
</tr>
<tr>
<td>2008</td>
<td>8415488</td>
<td>23.51</td>
</tr>
<tr>
<td>2009</td>
<td>10733112</td>
<td>27.53</td>
</tr>
<tr>
<td>2010</td>
<td>12201302</td>
<td>13.67</td>
</tr>
<tr>
<td>2011</td>
<td>13815222</td>
<td>13.22</td>
</tr>
<tr>
<td>2012</td>
<td>15203829</td>
<td>10.05</td>
</tr>
<tr>
<td>2013</td>
<td>18205534</td>
<td>19.74</td>
</tr>
</tbody>
</table>
Table 5.10 shows the loan and advances of bank.

<table>
<thead>
<tr>
<th>Year (31st, March)</th>
<th>Loan &amp; Advances Rs.</th>
<th>Percentage variation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3644938</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>4420800</td>
<td>21.28</td>
</tr>
<tr>
<td>2008</td>
<td>5369238</td>
<td>21.45</td>
</tr>
<tr>
<td>2009</td>
<td>6505849</td>
<td>21.16</td>
</tr>
<tr>
<td>2010</td>
<td>7195391</td>
<td>10.59</td>
</tr>
<tr>
<td>2011</td>
<td>7924405</td>
<td>10.13</td>
</tr>
<tr>
<td>2012</td>
<td>9911931</td>
<td>25.08</td>
</tr>
<tr>
<td>2013</td>
<td>12968187</td>
<td>30.83</td>
</tr>
</tbody>
</table>

*% variation = current year/previous year*100-100

5.10 Concluding notes

For the purpose of present study secondary data have been used. To analyze financial performance of regional rural banks in Gujarat in post merger period Mann Kendal test applied for trend analysis and to finding significant difference of RRBs in Gujarat ANOVA techniques was applied. The next chapter gives trend analysis of performance of RRBs in Gujarat.

---

1 Annual Reports of BGGB for various years.
2 Annual Reports of DGGB for various years.
3 Annual Reports of SGB for various years.