CHAPTER IV
DESIGN OF THE STUDY

Provision of institutional credit not only helps for the rural development but also increases production and productivity in the economy, particularly in agricultural sector and self-employment ventures. The credit provided by the co-operatives and commercial banks were found to be inadequate to the rural borrowers until the first nationalisation of 14 major commercial banks by the government of India. Through the various schemes introduced from time to time the Reserve Bank of India has made the commercial banks to channelise their credit to the grass-root level of the society. However, there was no planned lending covering every sector and every sections of the rural community. There was scattered lending and lop-sided credit deployment. The recently introduced service area approach under lead bank scheme is one of the attempt by the Reserve Bank of India to overcome the weaknesses of previous schemes in institutional credit and to fix the responsibility to the banks in the matter of village adoption and village-wise credit planning. There was a few attempts to assess the performance of service area approach in different regions of the country. However, these studies are not exhaustive in their efforts covering each and every aspect of service area approach. Hence, the present study has been made to assess howfar the service area approach has satisfied its objective in the deployment of rural credit.
4.1 OBJECTIVES OF THE STUDY

The broad objective of the study is to assess the effectiveness of lead banks' service area approach upon the lending and resource mobilisation programmes of the banks. However, the specific objectives of the study are,

1. to analyse Service area Concentration of banks in the extension of different types of credit under the new area approach.

2. to study the concentration of the banks on Productive lending under service area approach.

3. to analyse the target group concentration of the commercial banks in the extension of credit under service area approach.

4. to study the concentration of the banks on priority sector lending under service area approach.

5. to analyse sectoral concentration of the banks in the extension of IRDP and Non-IRDP credit under service area approach.

6. to analyse change in the inter-bank sectoral pattern of credit under service area approach.

7. to analyse the change in the inter-sectoral distribution of credit under service area approach.

8. to analyse the performance of different banks in realising the targeted sectoral pattern of credit under service area approach.

9. to analyse bank-wise credit performance under service area approach.

10. to analyse sector-wise credit performance of different banks under service area approach.
11. to analyse the inter-bank difference in the credit performance under service area approach.

12. to study inter-sectoral balance in the credit performance of the banks under service area approach.

13. to analyse the impact of the service area approach upon the distribution of different types of credit between service area and outside service area.

14. to examine the impact of service area approach upon the distribution of different types of credit between the individuals in the service area.

15. to analyse the impact of service area approach upon the distribution of different types of credit between the villages in the service area.

16. to analyse inter-sectoral and intra-sectoral imbalance in the extension of credit under service area approach.

17. to study the imbalance between the district and the service area of each of the banks under study in the extension of different types of credit under service area approach.

18. to analyse the scattered lending under service area approach.

19. to analyse the recovery performance of the banks in the service area approach under different types of credit.

20. to analyse the non-performing assets of banks in different types of credit under service area approach.

21. to study the deposit mobilisation of banks under service area approach.

22. to study the balance in the deposit mobilisation.

23. to analyse the resource deployment and recycling of credit under service area approach.
4.2 HYPOTHESES OF THE STUDY

A few relevant null-hypotheses for the objectives mentioned above are presented as follows.

1. There is no improvement in the area concentration of the banks in the extension of different types of credit under service area approach.

2. There is no improvement in the proportion of lending made to productive purpose under service area approach.

3. There is no improvement in the target group concentration of the banks under service area approach.

4. There is no improvement in the concentration of banks on priority sector lending.

5. There is no increase in the proportion of credit made to the most priority sector viz., agri-crop loan under service area approach.

6. There is no common sectoral pattern of credit under service area approach.

7. There is no inequitable distribution of credit between different sectors of the economy under service area approach.

8. There is no difference between realised and targeted sectoral pattern of credit under service area approach.

9. There is no improvement in the credit performance of each of the banks under service area approach in the extension of credit.

10. There is no improvement in the credit performance of different credit sectors.
11. There is no balance between the banks in their credit performance under service area approach.

12. There is no inter-sectoral balance in the credit performance of the banks under service area approach.

13. There is no impact of service area approach upon the distribution of credit between service area and outside service area.

14. There is no equitable distribution of different types of credit between individuals under service area approach.

15. There is no equitable distribution of different types of credit between the villages in the service area after the introduction of service area approach.

16. There is no imbalance between target and achievement of credit under service area approach both within each credit sectors and across the credit sectors of the economy under service area approach.

17. There is no difference between the district and the service area of the banks under study in the credit concentration efforts of the banks.

18. There is no scattered lending under service area approach.

19. There is no improvement in the recovery performance of the banks under service area approach.

20. There is no reduction in the proportion of non-performing assets in different types of credit under service area approach.

21. There is no improvement in the deposit mobilisation of the banks under service area approach.

22. There is no balanced deposit mobilisation from service area and outside service area.
There is no improvement in the resource deployment and recycling of credit by the banks under service area approach.

4.3 SCOPE OF THE STUDY

The study aims at evaluating the performance of Service Area Approach of Lead Bank Scheme enforced in Bhavani Block of Erode District. The study confines to six commercial bank branches selected from the study area. The study highlights the performance of commercial banks under service area approach in realising the service area objective of making rural lending more productive by concentrating on target groups, weaker sections and priority sectors in the service area, reducing scattered lending, making realistic planning, realising balanced sectoral and village development through balanced credit, making judicious deployment of resources by promoting deposit mobilisation and improving recycling of credit by better recovery and maintaining low level of non-performing assets. Therefore the study concentrates on the aspect of service area concentration, priority sector concentration, productive lending concentration of the commercial banks under service area approach as against their concentration before the introduction of service area approach. The study also analyses the sectorwise and bankwise performance in the realisation of credit targets set under district credit plan for each of the bank branches both before and after the introduction of service area approach. The study also concentrates on the analysis of change in the sectoral pattern of credit under service area approach. It also focuses its attention on the study of sectoral balance, balance between individuals,
The study covers the aspect scattered lending under service area approach as against the phenomenon of scattered lending before the introduction of service area approach. In addition, the study focuses on the performance of banks with reference to deposit mobilisation, recovery of loans, reduction of non-performing assets and recycling of credit under service area approach in the background of its performance before the introduction of service area approach.

4.4 PERIOD OF STUDY

The study is made with reference to the period from January 1st, 1988 to December 1993. Since the study is based on micro-level secondary data, only two credit plan periods, viz., 1988 and 1991 is selected for the study. The former being the period before the introduction of service area approach and the latter being the period after the introduction of service area approach. Since the service area approach has been introduced in the credit plan period of 1989, considering the time lag in adoptability of the programme and through normality of the period, 1991 credit plan period has been selected for the study among the periods under service area approach. Hence specifically the study is with reference to the credit plan periods 1988 and 1991.
4.5 CONCEPTS OF THE STUDY

4.5.1 SERVICE AREA

Cluster of villages exclusively assigned to a specified rural or semi-urban commercial bank branch for extending credit.

4.5.2 PRODUCTIVE CREDIT

Credit given to income generating purpose like agriculture, agri-allied, small-business etc.,

4.5.3 NON-PRODUCTIVE CREDIT

Credit which are given to non-income generating purpose like consumption loan, deposit loan, personal jewel loan etc.,

4.5.4 SECTORAL CREDIT

Credit given to each of the sectors.

4.5.5 AGRICULTURAL CREDIT

It includes crop-loan, agri-equipment loan, bullock-loan, minor-irrigation loan, agri-jewel and value-secured loan made for agricultural purpose.

4.5.6 AGRI-ALLIED SECTOR CREDIT

It includes loan given for rearing cows, buffaloes, goat, sheep, poultry, fishery, bee-keeping, sericulture, piggery, rabbit-rearing etc., which are very much allied to agriculture.
4.5.7 SMALL BUSINESS SECTOR CREDIT

It consists of loans made to manufacturing, trade and service sectors. It includes loan made to any business enterprise providing any service with its original cost of equipment not exceeding Rs.2 lakhs and working capital limit of Rs.1 lakh or less.

4.5.8 TARGET GROUP

It consists of weaker sections, minorities, women, professional and self-employed persons, educated youth and the priority sector categories.

4.5.9 WEAKER SECTIONS

It include people who are economically poor or socially disadvantaged, who are below the poverty line eligible for loan under IRDP and Differential Rate of Interest, small-farmers and marginal farmers with 5 acres or less, landless labourers, tenant farmers, share-croppers, artisans in the village and cottage industries and SC and ST.

4.5.10 BALANCED CREDIT

In general it refers to equitable distribution of credit between individuals, between sectors and between villages. It also refers to the balance between allocation (target) and achievement.
4.5.11 ALLOCATION

Estimated amount accepted to be given for a particular sector.

4.5.12 ACHIEVEMENT

It is the realised amount of financing made by the banks in each of the sector during a specified credit plan period.

4.5.13 PER-ACCOUNT CREDIT

Average amount of credit made to each of the borrowers under each type of credit.

4.5.14 SCATTERED-LENDING

It is the practice of lending over wide areas by different banks.

4.5.15 OPERATIONAL INTERFERENCE OF THE BANKS

It refers to the practice of making credit in the allocated operational area of each of the other banks.

4.5.16 LEAD BANK

It refers to a particular bank in the district which tops in the performance and in the number of branches who directs and supervises other banks in all credit activities.
4.5.17 RECOVERY OF LOAN

It refers to the amount of loan recovered from each of the borrowers.

4.5.18 NON-PERFORMING ASSETS

It refers to the loan outstanding in the zero recovery for a period of three years.

4.5.19 AREA DEPOSITS

It refers to the deposits mobilised within service area or outside the service area of a particular bank.

4.5.20 TOTAL BANK DEPOSITS

It refers to the deposits mobilised by a bank from both within service area and outside the service area.

4.5.21 PER-ACCOUNT DEPOSIT

It refers to the average amount of deposit mobilised from the depositors of the bank.

4.5.22 RELATIVE DEPOSIT

It is the average amount of deposit mobilised in the service area in relation to the average amount of deposits mobilised from outside the service area.
4.5.23 RESOURCE DEPLOYMENT

The extension of loan by a specified bank out of its resources. The resource of the bank include the amount of deposits mobilised and recovery of loan made by the bank during a particular credit plan period.

4.6 METHODOLOGY

The validity of any study to a great extent depends on the method followed in the selection of statistical unit, collection of data and in the method adopted in the analysis. Hence, a clear understanding of the methods followed in the study is important. A detailed account of the methods followed in the study are given below.

4.6.1 SELECTION OF STUDY AREA

Since the broad objective of the study is to assess the performance of service area approach, the study area has been selected in such a way that it reflects better performance of commercial banks in lending and deposit mobilisation programmes. Gauged by certain development indicators during 1994-95, viz.; population served by per bank office, percapita deposits and percapita advances, Erode District (formerly Periyar District) is found to be one among the better performed districts in the State74. Hence, Erode district has been purposively selected in the first stage of multi-stage sampling technique adopted for the

LOCATION OF ERODE DISTRICT
IN TAMILNADU

LOCATION OF ERODE DISTRICT
IN TAMILNADU

KARNATAKA

ANDHRA

VELLUR

KANCHI

PURAM

THIRUVANNA MALAI

DHARMAPURI

KADALUR

SALEM

VILUPPURAM

TRICNY

NAGAPPATTINAM

NILGIRIS

COIMBATORE

ERODE

NAMAKKAL

PERAMBALUR

KARUR

DINDUGUL

POURUKOTTAI

THIRUVALLUR

MADRAS

THIRUVINNADU

TAMIL NADU

IN INDIAN OCEAN

KANNYAKUMARI

TUTICORIN

THIRNELL YELI

RAJA NATHA PURAM

VIRUTHNAGAR

KARAikal

Dhay OF BENGAL
selection of study area. Considering the need to select bank branches in their proximity for the analysis of the phenomenon of scattered lending under the single co-ordination mechanism of different developmental agencies operating in a homogeneous area, in the second stage Bhavani Block has been randomly selected out of 20 Blocks of Erode district using random tables which represents 5 percent of the universe. Keeping in mind the intensity of study, micro-level secondary source of data and voluminous of the data involved, the required minimum number of six bank branches out of nine bank branches operating in the block and their respective service area has been randomly selected in the third stage of multi-stage sampling process. The following are the bank branches which are ultimately selected for the study.

<table>
<thead>
<tr>
<th>Nationalised Bank Branches</th>
<th>Service Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Canara Bank - Sakthinagar</td>
<td>1. Appakudal,</td>
</tr>
<tr>
<td></td>
<td>2. Oricheri,</td>
</tr>
<tr>
<td></td>
<td>3. Punnam.</td>
</tr>
<tr>
<td>2. Canara Bank - Bhavani</td>
<td>1. Thottipalayam,</td>
</tr>
<tr>
<td></td>
<td>2. Urachikottai,</td>
</tr>
<tr>
<td></td>
<td>3. Chinnapuliyur.</td>
</tr>
</tbody>
</table>

3. State Bank of India - Bhavani
1. Varadhanallur,
2. Sanniyasipatti,
3. Mayilambadi.

4. Indian Overseas Bank - Odathurai
1. Odathurai.

### Scheduled Commercial Bank Branches

<table>
<thead>
<tr>
<th>Branch Name</th>
<th>Service Area</th>
</tr>
</thead>
</table>

### 4.6.2 COLLECTION OF DATA

The present study is an empirical research based on micro-level secondary data. Complete enumeration of individual accounts has been made from the ledger of the different commercial banks under study for the credit plan periods 1988 through 1993. Even though the study is with reference to two credit plan periods viz., 1988 and 1991, the accounting particulars with reference to the credit plans 1992 and 1993 has been collected to ascertain the normality of periods in credit extension and to identify the non-performing assets of commercial banks. From the loan account ledger, data has been collected with respect to age, sex, community, village locality of account holder, amount of loan taken, purpose of loan, type of loan, scheme of loan, mode of repayment, recovery made, outstanding of loan, non-performing assets etc. The particulars regarding the individual deposit particulars such as amount of deposit and locality of the depositor for the credit plan periods 1988 and 1991 has also been collected from the different commercial banks under study. The particulars
regarding the service area of each of the bank branches under study and the mechanism of service area approach has been ascertained from the interview made with the respective branch managers of the commercial banks. The population figures for the district and for each of the revenue villages coming under service area of different bank branches under study has been obtained from the 1991 Primary Census Abstract of Tamilnadu. The credit target particulars with respect to Erode district and with respect to different service areas of commercial bank branches under study, the district credit achievement particulars and the district level deposit mobilisation particulars etc., have been obtained from the Canara Bank - Lead Bank’s Annual Credit Plan 1988 through 1993 reports for Erode district published from time to time. After collecting the individual account data, using computer the data has been consolidated by proper classifications according to the requirements of the purpose of enquiry and according to the classifications followed in the annual action plans for fixing the targets so as to make meaningful comparisons of achievements with the targets of the service area.

4.6.3 METHOD OF ANALYSIS

The performance of the banks under service area approach in the extension of credit, recovery of credit and mobilisation of deposits has been analysed in terms of service area concentration, target group concentration, weaker
section concentration, priority sector concentration and productive credit concentration of the commercial banks both before and after the introduction of service area approach. Both percentage analysis and ratio analysis has been invariably followed in the different analysis of the study. The significance of the difference in the performance of the banks between service area period and pre-service area period and the significance of difference between allocation and achievement of credit have been analysed using Wilcoxon's Signed Rank Test. To analyse the change in the inter-bank and inter-sectoral balance in the sectoral distribution of credit and in the credit performance of the banks under the impact of service area approach, Kruskal-Wallis Test has been followed. The balanced distribution of different types of credit between service area and outside service area has been analysed in terms of the ratio of per account credit in the service area to the per account credit in the outside service area. The balance between individuals in the extension of different types of credit has been analysed in terms of standard deviations of individual credits and the significance of change in individual distribution of credit between the pre-service area approach and service area approach periods has been analysed by the analysis of variance test (F test). Similarly, the balance between the villages in the distribution of credit has been analysed in terms of the standard deviations of per capita credit of service area villages. The significance of change in their distribution between two periods has been analysed using F test. The inter-sectoral and intra-sectoral imbalance in the extension of credit has also been
analysed using imbalance index developed for that purpose. The imbalance between service area and the district in the extension of different types of credit has been analysed in terms of the newly developed credit concentration ratio. The phenomenon of scattered lending by each of the types of credit under service area approach has been analysed in terms of the indices of the interference of a specified bank in other banks' area and the interference of other banks in a specified bank area in the extension of different types of credit. The recovery performance of the banks under different types of credit has been analysed with reference to pre-service area approach period and service area approach period using recovery percentage of credit made. The recovery performance of the banks under different types of credit has also been analysed in terms of their respective percentage of non-performing assets. Deposit mobilisation of the banks under service area approach in relation to deposit mobilisation in the pre-service area approach period has been analysed both in terms of absolute amount of deposits and in terms of the percentage of service area deposits to total bank deposits. The analysis of relative level of deposit mobilisation in the service area as against that of outside service area has been made in terms of the ratio of percapital deposit in the service area to the deposits from outside service area. The resource deployment performance of the banks in the service area and outside service area both under service area approach and pre-service area approach period has been analysed both in terms of the ratio of service area credit to the service area deposits and the
ratio of service area credit to the total bank deposits. It has also been analysed by the resource deployment index developed for that purpose. Some specific methods employed in the analysis which need to be explained are furnished under the following sections.

4.6.3.1 PROPORTION OF SERVICE AREA CREDIT

It has been used to analyse the service area concentration of banks in the extension of different types of credit. It is the percentage ratio of credit made in the service area to the total amount of credit made both in service area and outside service area, symbolically,

\[
\text{Proportion of service area credit in the } i\text{th type of credit} = \frac{C_{SAi}}{C_{n}}
\]

Where \( C_{SAi} \) is the \( i \)th type of credit made in the service area

\( C_{n} \) is the \( i \)th aggregate type of credit made both in the service area and outside service area

4.6.3.2 PROPORTION OF TARGET GROUP CREDIT

It is used to study the extent of attention shown by the commercial banks to the target group in the extension of different types of credit. It is calculated by the formula,
\[
\frac{\text{Proportion of ith type of credit extended to target group}}{\text{C}_{ri}} = \frac{\text{C}_{rj}}{\text{C}_{ri}}
\]

Where

- \(\text{C}_{rj}\) is the amount of ith type of credit made to the target group
- \(\text{C}_{ri}\) is the total amount of ith type of credit made both to the target and non-target groups in the service area

### 4.6.3.3 PROPORTION OF PRODUCTIVE CREDIT

It is used to find to what extent the commercial banks have concentrated in productive credit while extending credit in the service area. It is computed as follows:

\[
\text{Proportion of productive credit} = \frac{\text{C}_p}{\text{C}_{SA}}
\]

Where

- \(\text{C}_p\) is the amount of credit made for productive purpose in the service area
- \(\text{C}_{SA}\) is the total amount of credit made in the service area

### 4.6.3.4 PROPORTION OF PRIORITY SECTOR CREDIT

It is used to analyse the concentration of commercial banks on the priority sector credit. It is obtained by
Proportion of Priority sector credit = \frac{C_{PS}}{C_{SA}}

Where

C_{PS} is the amount of service area credit made to the priority sector
C_{SA} is the total amount of credit extended in the service area

4.6.3.5 SECTORAL PROPORTION OF CREDIT

It is used to ascertain sectoral distribution of credit. It has been calculated by the following formula

\text{Proportion of ith sector credit} = \frac{C_{Si}}{C_{PS}}

Where

C_{Si} is the amount of credit made to ith priority sector in the service area
C_{PS} is the total amount of priority sector credit made in the service area

4.6.3.6 CREDIT PERFORMANCE SCORE

The credit performance of the banks have been analysed using credit performance score. It is the percentage of ratio of achievement of credit to the respective target amount of credit.
Credit Performance Score = \( \frac{C_{ai}}{C_{ti}} \times 100 \)

Where

- \( C_{ai} \) is the achieved amount of \( i \)th credit
- \( C_{ti} \) is the targeted amount of \( i \)th credit

### 4.6.3.7 Wilcoxon's Signed Rank Test

Wilcoxon's signed rank test is a non-parametric test. It is used to test the significance of the differences in the different performance measures of commercial banks between service area approach period and pre-service area approach period. The Wilcoxon's signed rank test consist of finding difference in the performance scores of two periods, ranking of these differences from smallest to largest in terms of their absolute values and then assigning the sign of the respective differences. In assigning ranks odd number of zero differences should be discarded and the rest be divided evenly between positive differences and negative differences. As in the case of tied scores, these zero differences must be assigned the average of the tied ranks. Having ranked the absolute value of the differences and assigned the positive and negative signs, the smaller sum of signed ranks among the positive and negative ranks has been obtained and this is denoted by the letter \( W_i \). Using Wilcoxon's distribution, the number of cases for which the smaller sum of the signed ranks (\( W_i \)) is less than
or equal to the number of signed ranks \( n \) has been obtained.\(^7\)

The total number of equally likely possibilities for the sequence of \( n \) number of signs is \( 2^n \). Hence the probability of obtaining the smaller sum of signed ranks which is less than or equal to the number of signed ranks is calculated by the formula.

\[
P = \frac{\text{Number of cases where } W \leq n}{2^n}
\]

The null-hypothesis under the Wilcoxon's test in the present study is that the service area approach had no effect upon the performance of the banks in achieving the laid down objectives.

In a one-tailed test, if the calculated probability value is less than 0.05, the null-hypotheses is rejected at 5 percent level of significance. On the other hand if the calculated probability value is greater than or equal to 0.05, we accept the said null-hypotheses at 5 percent level of significance.

4.6.3.8 KRUSKAL-WALLIS 'H' TEST

The Kruskal-Wallis test is also a non-parametric test which has been used to test the significance of the difference between different banks or different sectors either in their credit performance or in the distribution of credit between various sectors.

In the Kruskal-Wallis ‘H’ test, ranks are assigned to all performance scores or sectoral proportions as the case under consideration to analyse the difference between the banks or the credit sectors. Ranking is made starting from lowest value to the highest value across the different banks or sectors as the case may be. The lowest value is given the rank of one and successive ranks for successively higher values. The tied scores or proportions are assigned average rank values, zero values are discarded. In case of tied ranks, correction for ties has been made in the calculated ‘H’ value. The sum of the ranks by each of the banks or sectors as the case may be has been made in each of the analysis and \( R_i \) is then calculated using the formula\(^78\)

\[
H = \frac{12}{N(N+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(N+1)
\]

Where \( k \) which is the total number of observations

\[
N = \sum_{i=1}^{k} n_i
\]

over ‘k’ number of banks or sectors.

\( n_i \) = The number of observations in ith bank or sector.

\( R_i \) = The sum of rank for ith bank or sector.

Where ties in rank are involved, a correction for ties has been made using the formula,

Correction Factor = \frac{\sum T}{N^3 - N}

Where \( T = t^3 - t \)

\( t \) = number of tied observations.

Then corrected value of \( H \) has been obtained using the formula

\[
\text{Corrected } H = \frac{H}{\text{Correction Factor}}
\]

Since there is more than three groups (banks or sectors) or more subjects (observations) than five in any one of the groups, the calculated 'H' value can be approximated to \( \chi^2 \) values. Hence 'H' Statistics in this study has been evaluated using the \( \chi^2 \) distribution with \( k - 1 \) degrees of freedom, Where 'k' represents the number of banks or sectors.

The null-hypotheses tested under 'H' test in the respective analysis are:

1) there is no significant difference between the banks in the sectoral distribution of credit.

2) there is no significant difference between the sectors.
3) there is no difference between the banks in their credit performance.

4) there is no difference between the sectors in their credit performance.

If the calculated 'H' value is greater than the table value of Chi-square with \( k - 1 \) degrees of freedom at a specified level of significance (5 percent or 1 percent level of significance), we reject the respective null-hypothesis. Otherwise the null-hypothesis is accepted.

**4.6.3.9 STANDARD DEVIATION OF INDIVIDUAL CREDIT / DEPOSITS**

The standard deviation of individual credit / deposits has been calculated by the formula

\[
S.D = \sqrt{\frac{n}{n-1} \sum_{i=1}^{n} (X_i - \bar{X})^2}
\]

Where

- \( X_i \) = credit extended to / deposit mobilised from ith individual
- \( \bar{X} \) = average amount of credit extended to / deposit mobilised from the individuals
- \( n \) = Total number of individuals who availed the bank credit / made deposits
4.6.3.10 STANDARD DEVIATION OF PERCAPITAL VILLAGE CREDIT

\[
S.D._{vc} = \sqrt{\frac{k}{\sum_{j=1}^{k} (C_j - VC)^2}}
\]

- \(C_j\) = Percapital credit of jth village
- \(\overline{VC}\) = Village average percapital credit
- \(k\) = Total number of villages under service area of each of the bank branches.

4.6.3.11 THE VARIANCE RATIO TEST

The variance ratio test has been used to test the significance of the difference between the variances of individual/village credit in the period before service area approach and the period under service area approach. It is carried out by calculating 'F' ratio.

\[
F = \frac{S_1^2}{S_2^2}
\]

Where \(S_1^2\) = is the greater variance of individual/village credit in either of the two periods

\(S_2^2\) = is the smaller variance of individual/village credit in either of the two periods.
If the calculated value of 'F' exceeds theoretical F value at 5 percent level of significance for \( v_1 = (n_1 - 1) \) and \( v_2 = (n_2 - 1) \) degrees of freedom, we reject null hypothesis of no significant difference between the variances of individual / village credit in the two study periods. Here \( n_1 \) and \( n_2 \) are respectively the number of observations with which \( S_1 \) and \( S_2 \) are calculated.

4.6.3.12 ANALYSIS OF VARIANCE TEST

The analysis of variance test has been employed to test the significance of the difference between the co-efficients of variations of individual / village credit made in the periods before and after the introduction of service area approach. This has been accomplished by calculating mean square between the co-efficient of variations in the two study periods and by calculating mean square within co-efficient of variations in the two periods. The mean square between the co-efficient of variations has been calculated by the formula

\[
MSC = \frac{\sum_{j=1}^{k} n(X_j - X)^2}{k - 1}
\]

The mean square within the sample has been computed by the formula

\[
MSE = \frac{\sum_{j=1}^{k} \sum_{i=1}^{n} (X_{ij} - \bar{X}_j)^2}{(N - k)}
\]
Where \( X_j = \) Co-efficient of variation \( i \)th kind of credit in the \( j \)th period

\( \bar{X}_j = \) the average of the co-efficient of variations of different kinds of credit in the \( j \)th period

\[
\bar{X} = \frac{1}{k} \sum_{j=1}^{k} \bar{X}_j
\]

\( k = \) number of periods under consideration

\( N = n_1 + n_2 \) respectively the number of observations of co-efficient of variations of credit in the pre-service area period and the number of observations of co-efficient of variations in the service area period.

Having obtained the MSC and MSE, the analysis of variance ratio is calculated by the formula,

\[
F = \frac{\text{MSC}}{\text{MSE}}
\]

If the computed \( F \) value exceeds the theoretical \( F \) value at a specified level of significance (5 percent level or 1 percent level) for \( v_1 = (k - 1) \) and \( v_2 (N-k) \) degrees of freedom, we reject the null-hypothesis of no difference between the co-efficient of variations of individual / village credit in the pre-service area period and service area period.
4.6.3.13 RATIO OF PERCAPITA SERVICE AREA CREDIT TO NON-SERVICE AREA CREDIT

The imbalance in the average amount of credit extended between service area and outside service area has been analysed in terms of the ratio of percapital service area credit to percapita outside service area credit. Its computation is based as follows:

\[ \text{RPC}_{\text{SAi}} = \frac{-C_{\text{SAi}}}{-C_{\text{OSAi}}} \]

Where \( \text{RPC}_{\text{SAi}} \) is the ratio of percapita \( i \)th credit in service area to the percapital \( i \)th credit in outside service area.

\( -C_{\text{SAi}} \) is the percapita amount of \( i \)th credit made in the service area.

\( -C_{\text{OSAi}} \) is the percapita amount of \( i \)th credit made in the outside service area.

4.6.3.14 INTRA-SECTORAL AND INTER-SECTORAL IMBALANCE INDICES

The imbalance in the extension of credit within the sector and between sectors has been analysed respectively in terms of intra-sectoral and inter-sectoral imbalance indices. The intra sectoral imbalance index has been obtained by the formula,
IBI_{wi} = \frac{(C_{ai} - C_{ti})}{C_{ti}} \times 100

Where

IBI_{wi} \quad \text{is the intra sectoral imbalance index for ith type of credit}

C_{ai} \quad \text{is the achieved amount of ith type of credit}

C_{ti} \quad \text{is the targeted amount of ith type of credit}

Similarly, inter-sectoral imbalance index (IBI_B) has been computed by the formula,

\[ IBI_B = \sqrt{\frac{\sum_{i=1}^{n} \left(\frac{(C_{ai} - C_{a})}{C_{a}}\right)^2}{n}} \]

Where

C_{ai} \quad \text{and} \quad C_{a} \quad \text{are as defined earlier and 'n' is the number of types of credit}

4.6.3.15 CREDIT CONCENTRATION RATIO

The balance between district and service area in the extension of credit has been analysed in terms of credit concentration ratios. It is obtained by the formula,
\[ CCR_{ij} = \frac{C_{SAj} / C_{D_i}}{P_{SAj} / P_D} \]

Where

- \( CCR_{ij} \) is the credit concentration ratios of \( j \)th bank in the extension of \( i \)th type credit.
- \( C_{SAj} \) is the amount of \( i \)th type of credit extended in the service area of \( j \)th bank.
- \( C_{D_i} \) is the total amount of \( i \)th type of credit extended by all banks in the district.
- \( P_{SAj} \) is the total number of population in the service area of \( j \)th bank.
- \( P_D \) is the population of the district.

**4.6.3.16 INTERFERENCE INDICES**

The phenomenon of scattered lending has been analysed in terms of the index of average interference of a specified bank in other banks' area and the index of average interference of other bank in a specified bank area in the extension of each of different types of credit. The index of average interference of a specified bank in other banks' area in the extension of each type of credit is calculated by the formula,

\[ I_{ik} = \frac{\sum_{j=1}^{k} (C_{ij} / C_{ij})}{k} \]
Where

\[ \bar{I}_{ik} \] is the index of average interference of \( i \)th bank in \( K \) number of other banks' area.

\[ C_{ij} \] is the credit extended by \( i \)th bank in \( j \)th bank area.

\[ C_{rj} \] is the total credit extended in the \( j \)th bank area.

\( k \) is the number of other banks.

Similarly, the index of average interference of other banks in a specified bank area in the extension of each of the different types of credit has been computed by the formula,

\[ \bar{I}_{ki} = \frac{\sum_{j=1}^{k} \left( \frac{C_{ji}}{C_{rj}} \right)}{k} \]

Where

\[ \bar{I}_{ki} \] is the index of average interference of \( 'k' \) number of other banks in \( 'i' \)th bank area.

\[ C_{ji} \] is the credit extended by \( j \)th bank in \( i \)th bank area.

\[ C_{ri} \] is the total credit extended by all the banks in \( i \)th bank area.

\( k \) is the number of other banks.

4.6.3.17 RECOVERY PERCENTAGE

Recovery performance of banks under different types of loan made has
been analysed in terms of recovery percentage. It is obtained as follows:

\[
\text{Recovery Percentage of ith type of credit} = \frac{\text{Recovery amount of ith type of Current loan}}{\text{Recovery and outstanding of ith type of current loan}} \times 100
\]

4.6.3.18 RATIO OF NON-PERFORMING ASSETS

The recovery performance of commercial banks have also been studied in terms of the ratio of non-performing assets. It is obtained by the formula,

\[
\text{Ratio of NPA}_i = \frac{\text{NPA}_i}{\text{CR}_i + \text{Co}_i}
\]

Where

- \( \text{NPA}_i \) is the non-performing assets of ith credit
- \( \text{CR}_i \) is the recovery amount of ith type of current credit
- \( \text{Co}_i \) is the outstanding amount of ith type of current credit

4.6.3.19 RATIO OF SERVICE AREA DEPOSIT TO OUTSIDE SERVICE AREA DEPOSIT

It is used to analyse the deposit mobilisation performance of the banks. It is computed in the following way:
Ratio of Service area Deposit = \( \frac{D_{SA}}{\bar{D}_{OSA}} \)

Where

\( D_{SA} \) is the average amount of deposit mobilised from the service area.

\( \bar{D}_{OSA} \) is the average amount of deposit mobilised from outside the service area.

4.6.3.20 CREDIT - DEPOSIT RATIO

The deposit deployment of the commercial banks has been studied in terms of the ratio of service area credit to the service area deposit and ratio of service area credit to the total bank deposits. They are defined respectively as follows.

\[
C_{D_{SA}} = \frac{C_{SA}}{D_{SA}} \quad \text{and} \quad C_{SA}D = \frac{C_{SA}}{D}
\]

Where

\( C_{D_{SA}} \) is the ratio of service area credit to service area deposit.

\( C_{SA}D \) is the ratio of service area credit to total deposit.

\( C_{SA} \) is the credit extended in the service area.
$D_{SA}$ is the deposit mobilised from the service area

$D$ is the total amount of deposit mobilised both from service area and outside service area

### 4.6.3.21 RESOURCE DEPLOYMENT INDEX

The resource deployment performance of the banks has been studied by the use of Resource Deployment Index. It has been defined as follows.

$$RDI_j = \frac{C_{Tj}}{D_j + C_{Rj}}$$

Where

- $RDI_j$ is the resource deployment index of $j$th commercial bank branch.
- $C_{Tj}$ is the total amount of credit extended by the $j$th commercial bank branch during a specified period.
- $D_j$ is the total amount of deposit mobilised by the $j$th bank during the same period.
- $C_{Rj}$ is the total amount of recovery made by the $j$th bank during the period under consideration.

### 4.7 LIMITATIONS OF THE STUDY

The time factor and the voluminous of work involved in the collection and consolidation of data are the factors which limits the present study to the study of only six commercial bank branches. The non-availability of data
with regard to the amount of refinances taken by the commercial banks, the analysis of resource deployment has been limited to two sources of resources of commercial banks viz., recovery of the loans made and the deposits mobilised. The phenomenon of scattered lending has been confined only to the interference between the commercial bank branches under study. The non-availability of data with respect to credit extended by other banks, other than the six banks under study makes us to limit ourselves with the study of scattered lending among the service area of the six banks under study. As the banks are selected in the same block in their proximity, there may be minimum possibility for the interference of other banks other than under study.

4.8 SCHEME OF THE THESIS

The study has been presented in ten chapters.

The first chapter deals with the introduction and the importance of the study. It stresses the need for the present study.

In the second chapter the operational mechanism of service area approach in Erode district has been outlined.

The third chapter is a review chapter which reviews previous studies on bank performances, performance of lead banks and performance of service area approach. It gives a brief resume of the results of various studies and
reviews the methodology adopted in the assessment of the performance of banks under different schemes.

The fourth chapter deals with methodology adopted in the study. It specifies the objectives of the study on the background of the ascertained problem. It explains selection of study area, method of data collection and analysis with its limitations. It also explains some of the concepts specific to the study.

The credit performance of the banks under service area approach has been analysed in the fifth chapter. It analyses the performance of banks with respect to fulfilling the objectives of service area approach. It analyses the credit performance under service area approach in terms of service area concentration, target group concentration, productive credit concentration, priority sector concentration of the banks in the extension of different types of credit. It also analyses the performance of bank in achieving their targets under different types of credit.

The distribution of credit has been analysed in the sixth chapter. It analyses the balance in the distribution in terms of individual-wise distribution, village-wise distribution, sector-wise distribution and the distribution between service area and the district.

The seventh chapter deals with the analysis of scattered lending under service area approach. It analyses the scattered lending in terms of the
operational interference of a specified bank in the other banks' area and the interference of other banks in the area of a specified bank area by each of the type of the credits.

The recovery performance of the banks under service area approach has been analysed in the eighth chapter in terms of the study of recoveries made and the maintenance of non-performing assets in the extension of different types of credit.

The ninth chapter analyses the resource deployment of commercial banks under service area approach. It analyses the deposit mobilisation by commercial banks under study and studies the recycling of credit in terms of credit-deposit ratio and resource deployment index.

The last chapter is a concluding chapter which summarises the findings of the study and gives policy suggestions.