CHAPTER – 2

METHODOLOGY

In this Chapter an attempt has been made to give an outline of the method of investigation, statistical tools and techniques used, the characteristics of data, the sample PSU banks, the detailed framework of the study and the period of the study.

2.1 Methods of Investigation

The study can be broadly segregated into two parts:
(i) Study of the credit risk management in four sample PSU banks in India in detail which is based on secondary data like annual reports, information available on websites of banks and the Reserve Bank of India etc. Primary data obtained through questionnaire has also been used. This part deals mainly with the qualitative aspects of credit risk management in PSU banks in India.
(ii) Study and detailed analysis of credit risk management in all the 26 PSU banks in India covering the period from 1st April, 1995 to 31st March, 2011 which is based on secondary data obtained through the published annual reports and the data available on the websites of the PSU banks and the Reserve Bank of India etc. This part of the study
deals mainly with the quantitative aspects of credit risk management in PSU banks in India.

The qualitative aspects of the credit risk management practices in the four sample PSU banks have been studied by covering the following important aspects of credit risk management in PSU banks in India:

1. Risk Management Governance: Risk Management Architecture
2. Basel II Implementation
3. Identification of Non Performing Advances
4. Credit Rating
5. Risk Management Policy and Practices
6. Credit Risk Mitigation

The quantitative aspects of credit risk management in PSU banks have been studied and analysed using various statistical tools and techniques as described briefly below.

2.2 Statistical Tools and Techniques Used

Different parametric tests like mean, median, standard deviation etc. have been applied to examine the various aspects pertaining to credit risk management in PSU banks in India.

The mean has been computed in order to measure the central tendency representing the arithmetic average of the financial data over the period
Median has been computed to find the numerical value in the financial data which separates the higher half of the population to the lower half. To study the extent of variation in the data set, standard deviation have been used across the study period.

Multiple regression technique has been used as a multivariate statistical tool. Four independent variables ($X_1$, $X_2$, $X_3$, $X_4$) have been studied with gross NPA percentage as the dependent variable ($Y$). The linear multiple regression model involving the independent variables $X_1$, $X_2$, $X_3$ and $X_4$ and dependent variable $Y$ can be written as:

$$ Y = M_1X_1 + M_2X_2 + M_3X_3 + M_4X_4 + b $$

Where dependent $Y$ values are a function of the independent $X$ values. The $M$ values are coefficients corresponding to each $X$ value and $b$ is a constant value.

The coefficient of determination has been computed and used to find out the extent of variation in dependent variable $Y$ explained by the regression model. The $t$ test has been carried out to find out the statistical significance of each independent variable $X_1$, $X_2$, $X_3$ and $X_4$. 
2.3 **Sample for the Study and Data Characteristics**

The sample for the study of the qualitative aspects of credit risk management in PSU banks in India comprises of four PSU banks, namely, the State Bank of India, Bank of Baroda, Allahabad Bank and Punjab & Sind Bank. For the study of the quantitative aspects of the credit risk management in PSU banks in India all the twenty-six PSU banks in India have been studied.

Secondary data, i.e. annual reports and data available on the websites of PSU banks and the Reserve Bank of India has been utilized. Primary data has been obtained using the questionnaire filled by 1250 representative PSU bank officials.

2.4 **Framework of Analysis**

To get an idea of the size and corresponding ranking of the 26 PSU banks according to their size in India, the size of each of the 26 PSU banks has been measured in terms of the total assets of the bank as on 31st March, 2011 and the PSU banks have been ranked from 1 to 26 based on their relative size.

For studying and analyzing the credit risk management in the 26 PSU banks in India the following data, ratios and percentages have been used;
1. Gross Non Performing Assets Percentage
2. Net Non Performing Assets Percentage
3. Lending Rates
4. Ratio of Restructured Standard Advances to Gross Advances across Bank Groups
5. Ratio of Restructured Standard Advances to Gross Advances across Borrower Groups
6. Percentage of Capital to Risk Weighted Assets
7. Return on Assets
8. Credit Deposit Ratio
9. Collateral Ratio obtained by dividing Secured Loans by Total Loans

To get a better picture of credit risk management in PSU banks in India these ratios have been analysed further and interpreted using mean, median, maximum, minimum and the standard deviation.

The analysis of the performance and size of the sample four PSU banks in India for qualitative analysis of credit risk management has been done on the following criteria:
1. Size
2. Growth
3. Profit
4. Soundness
The indicators used for each of the above are as under:

1. Size – Total Assets
2. Growth – Advances, Deposits, Total Income, Interest Income
3. Profit – Operating Profit, Net Profit
4. Soundness – Return on Assets, Return on Net Worth, Capital to Risk Weighted Assets Ratio, Net NPA

2.5 Period of Study

The period of study for analyzing the credit risk management in PSU banks in India is the period from 1st April, 1995 to 31st March, 2011, i.e. sixteen years.