CHAPTER THREE
RESEARCH METHODOLOGY

The present study examines the performance measurement systems in Indian banking sector. With a view to develop a sound theoretical framework for investigation, a review of literature relating to performance measurement systems in general and banking sector in particular has been done in the previous chapter. Important studies relating to performance of banks and various performance measurement systems based on financial and non-financial measures used by the banks in India as well as abroad have been reviewed.

This study has two dimensions. Firstly, it studies the impact of economic liberalization on the performance of Indian banks. Secondly, it examines the existing performance measurement systems prevalent in the Indian banking sector and awareness of the banks regarding existing and new performance measurement systems based on both financial and non-financial measures (Balanced Scorecard or Performance Scorecard). The study also gives suggestions for designing a performance scorecard for the Indian banks so as to enable them to compete with their counterparts in the present globalized environment.

3.1 SAMPLE AND SAMPLING DESIGN

The sample of the study comprises of six banks in all, three each from both the public and private sector banks. The public sector banks include State Bank of India (SBI), Punjab National Bank (PNB) and Canara Bank (CB), whereas ICICI Bank, HDFC Bank and AXIS Bank represent the private sector. As all these banks are the key players from both the public and private sectors, thus, the sample represents the entire Indian banking sector.

In this study, an attempt has been made to examine the impact of economic liberalization on the business performance of Indian banking sector. For the purpose of study, all the banks are divided into five groups, i.e., all scheduled commercial banks, public sector banks, old private sector banks, new private sector banks and foreign banks.
It has also been endeavoured to examine the awareness and usage of existing and new performance measurement systems based on financial and non-financial measures in place in the Indian banking sector. Further, the present performance measurement systems in CAMEL framework have been evaluated.

A sample of six banks consisting of top three each from both the public and private sector banks on the basis of their size (assets) have been taken for the study. While collecting the data, an attempt has been made to give representation to the entire state of Punjab covering all its major districts and Chandigarh (UT) being its capital and regional, zonal, training and circle offices of all the selected banks.

In all, 200 bankers selected in equal number (100 each) from both the public and private sector banks based on stratified sampling have been drawn. These Bankers hold senior management positions such as General Manager, Vice President, Circle Officer, Zonal Manager, Deputy General Manager, Senior Manager and Branch Manager in banks.

The sample of Bankers selected for the study is shown as under:

<table>
<thead>
<tr>
<th>Public Sector Banks</th>
<th>Number of Bankers</th>
<th>Private Sector Banks</th>
<th>Number of Bankers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBI</td>
<td>35</td>
<td>ICICI Bank</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>PNB</td>
<td>35</td>
<td>HDFC Bank</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>Canara Bank</td>
<td>30</td>
<td>Axis Bank</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

The selected bankers were then interviewed with the help of pre-tested questionnaire (Appendix-I) at their offices.

### 3.2 HYPOTHESES OF THE STUDY

The null hypotheses of the present study are:

Ho, 1: There is no significant difference in the awareness levels about performance measurement systems amongst public and private sector bankers in India.
Ho, 2: There is no significant difference in the perception of public and private sector bankers with regard to alignment of individual objectives with the organizational objectives.

Ho, 3: There is no significant difference in the perception of public and private sector bankers in terms of contribution of various intangibles assets to the value creation for the banks.

Ho, 4: There is no significant difference in the perception of public and private sector bankers with regard to feedback taken from different stakeholders about contribution of various intangible assets to the value creation.

Ho, 5: There is no significant difference in the perception of public and private sector bankers regarding importance of various perspectives while introducing performance measurement system.

Ho, 6: There is no significant difference in the perception of public and private sector bankers regarding importance of various measures under financial perspective.

Ho, 7: There is no significant difference in the perception of public and private sector bankers about various indicators of employee productivity.

Ho, 8: There is no significant difference in the perception of public and private sector bankers about various indicators of branch productivity.

Ho, 9: There is no significant difference in the perception of public and private sector bankers regarding various measures of customer perspective.

Ho, 10: There is no significant difference in the perception of public and private sector bankers regarding various measures of internal business process perspective.

Ho, 11: There is no significant difference in the perception of public and private sector bankers regarding various measures of learning and innovation perspective.

Ho, 12: There is no significant difference in the perception of public and private sector bankers regarding various measures of employee perspective.

Ho, 13: There is no significant difference in the perception of public and private sector bankers regarding various measures of shareholders perspective.
Ho, 14: There is no significant difference in the perception of public and private sector bankers regarding various kinds of problems faced in the implementation of performance scorecard.

Ho, 15: There is no significant difference in the perception of public and private sector bankers about the relative importance of management motivations for emphasis on non-financial measures of performance.

Ho, 16: There is no significant difference in the perception of public and private sector bankers about the satisfaction level of present performance measurement system.

Ho, 17: There is no significant difference in the perception of public and private sector bankers regarding various benchmarks used by the banks to analyse their performance based on financial and non-financial measures.

Ho, 18: There is no significant difference in the perception of public and private sector bankers with regard to various factors affecting performance measurement system.

Ho, 19: There is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of Capital Adequacy.

Ho, 20: There is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of Assets Quality.

Ho, 21: There is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of Management Efficiency.

Ho, 22: There is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of Earning Quality.

Ho, 23: There is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of Liquidity.

3.3 CONSTRUCTION OF QUESTIONNAIRE AND ITS PRE-TESTING

To develop the questionnaire, the existing literature on performance measurement systems used in the Indian banking sector and performance scorecard
implementation in the service sector was reviewed. Many experts in the field of banking industry were also contacted. The observations made during the discussions with the various bank officials of different selected banks also helped in the preparation of questionnaire. The preliminary draft of questionnaire was pre-tested on 20 bankers. This helped in improving and finalizing the draft questionnaire. The questionnaire contained the questions relating to awareness of the bankers regarding existing and new performance measurement systems in Indian banking sector, extent of usage of performance scorecard based on both financial and non-financial measures to evaluate the present performance measurement systems in Indian banking sector in CAMEL framework and various problems faced by the bankers in the implementation of performance scorecard. Some open ended questions were also asked about how frequently their bank made changes in the performance measurement system (PMS) with changes in financial sector and banking industry, what were the critical success factors (CSFs) which they prioritised for their bank, and suggestions to improve the performance measurement system (PMS) of their banks to enable them to compete in the globalized environment.

3.4 DATA COLLECTION

To achieve the specific objectives of the study, both primary as well as secondary data has been collected. To examine the impact of economic liberalization on the performance of Indian banking sector, the data gathered from secondary sources was used. This includes Annual reports of banks, Perspective plans, Development reports, Statistical tables relating to banks in India, Reports on trend and progress of banking in India, RBI bulletin, RBI Annual reports, CMIE (Prowess) etc. Moreover, websites of all the selected banks and other sites related with the banking sector have also been used for the collection of data. The secondary data pertains to the period of 10 years from 1997-98 to 2007-08 which has been used to analyse the impact of economic reforms in the post-liberalization period, i.e., 1991 onwards.

The primary data gathered from bankers of different selected banks through a structured questionnaire has been used to examine the awareness and extent of usage of performance measurement systems based on financial and non-financial measures, and also to evaluate the present performance measurement systems of the banks in the CAMEL framework.
An interaction with top officials of the selected banks including GM, Vice-President, Zonal Managers, Circle Heads, Regional Managers, Principals of training colleges of different banks, Chief Manager and Managers helped to collect the primary data for the study.

The questionnaire has been administered in such a manner that the entire hierarchy of the banks, i.e., top level management of the banks responsible forformulating the bank’s mission, vision and strategies (i.e., CMD, MD, Board Members, Vice-President, GM etc.); middle level management responsible for communicating bank’s strategy down to operating people (i.e., Regional / Zonal/Circle / Divisional managers, principal of training colleges etc. ); and branch level management responsible for implementing the bank’s strategy to achieve the set mission and vision (i.e., Chief Manager / Branch Manager including officer rank people) is covered in the sample.

3.5 DATA ANALYSIS

For the purpose of analysis, the collected secondary data has been presented in five bank groups, i.e., all scheduled commercial banks, public sector banks, old private sector banks, new private sector banks and foreign banks. The business performance of the different bank groups has been measured on the basis of following five indicators:

A. Profitability Indicators:

(i) Income as a percentage of total assets
(ii) Interest income as a percentage of total assets
(iii) Non-interest income as a percentage of total assets
(iv) Spread/Margin as a percentage of total assets
(v) Gross Profit/Loss as a percentage of total assets
(vi) Non-Profit/Loss as a percentage of total assets
(vii) Expenditure as a percentage of total assets
(viii) Operating expenses as a percentage of total assets
(ix) Interest expanded as a percentage of total assets
(x) Cost to income ratio, etc.
B. **Productivity Indicators:**

(i) Business per employee  
(ii) Profit per employee  
(iii) Business per branch.

C. **Assets Quality Indicators:** The assets quality indicator includes the following:

(i) Gross NPAs as a percentage of total advances  
(ii) Net NPAs as a percentage of total advances  
(iii) Gross NPAs as a percentage of total assets  
(iv) Net NPAs as a percentage of total assets  
(v) NPAs recovered by SCBs through various channels like one-time settlement, Lok Adalat, DRT, SARFAESI Act, ARCs, etc.

D. **Prudential Regulations:**

(i) Market structure  
(ii) Capital Adequacy norms (focused)  
(iii) Accounting Provisioning of NPAs  
(iv) Supervision of banks  
(v) Privations of banks  
(vi) Interest rate deregulations  
(vii) Directed credit

Out of these, the study mainly focused on Capital Adequacy norms, Interest rate deregulations including CRR, SLR and Directed credit by the banks as per RBI norms.

E. **Technological Indicators:**

(i) Computerization in banks viz-a-viz branches like extent of computerization including CBS, etc.  
(ii) Branches and ATMs  
(iii) RTGS and other electronics transactions  
(iv) Retail electronics payment methods like ECS, EFT, NEFT, Credit cards and Debit cards
For analysis of primary data, collected data has been classified as per need of the study. For classification purpose the study mainly focused on awareness level of the banks and extent of usage of performance scorecard with a focus on both financial and non-financial measures and also evaluated the performance of the banks in the CAMEL framework in both the public and private sector banks. Bank-wise data has been classified into six selected banks, namely, State Bank of India (SBI), Punjab National Bank (PNB), Canara Bank (CB), HDFC Bank (HDFC), ICICI Bank (ICICI) and AXIS Bank (AXIS). Bankers have been classified sector-wise, i.e., public sector banks and private sector banks. These banks have been further classified bank-wise within each category of banks.

### 3.6 Tools of Data Analysis

The analysis of collected data has been done by using simple frequencies, percentages, averages, Weighted Average Scores (WAS), Mann-Whitney test (U-test), etc. Some of the important tools used for analysis in the study have been described as under:

**Weighted Average Scores (WAS):** Weighted average scores were calculated as per need of the study in the analysis of primary data. WAS has been used where the Bankers were asked to rank or rate different attributes relating to the functions of banks according to their degree of importance. For example, where five-point likert scale was used to measure the extent of importance as degree of satisfaction/dissatisfaction or to large extent/least extent regarding different attributes (variables) relating to banks, the scale rank was 5 to 1. Higher number indicates most important/highly satisfied and lesser scale indicates the most unimportant/highly dissatisfied. The average scores have been calculated by assigning weights, such as 5 for ‘most important’, 4 for ‘important’, 3 for ‘neither important nor-unimportant’, 2 for ‘unimportant’ and 1 for ‘most unimportant’. On the basis of frequency of rating for each attribute, weighted average scores for each attribute were calculated as below:

$$\bar{W} = \frac{1}{fw} \sum_{j=1}^{5} wfw$$

Where,
\( W = \) weighted average score

\( W = \) weight given to each attribute (W)

\( fw = \) number of Bankers who attached weight to each attribute.

**Mann-Whitney U-test** is a non-parametric test that is used to compare two population means that come from the same population. The Mann-Whitney U-test is also used to test whether two population means are equal or not. Mann-Whitney U-test was developed by Wilcoxon in 1945. It is used for equal sample sizes, and is used to test the median of two populations. The Mann-Whitney U-test is equivalent to the independent sample t-test in which the two independent (unrelated) groups of the case come from populations having the same distribution. The reason to use Mann-Whitney test is skewed data. Brief description and formula of this tool is given as under:

Wilcoxon Mann-Whitney test (U-test)

\[
U = n_1 \cdot n_2 + \frac{n_1(n_1 + 1)}{2} - R_1
\]

Where, \( n_1 \) and \( n_2 \) are of the same size and \( R_1 \) is the sum of ranks assigned to the values of the first sample. (In practice, whichever rank sum is conveniently obtained can be taken as \( R_1 \), since it is immaterial which sample is called the first sample).

Mann-Whitney U-test is a most powerful non-parametric test; hence, it does not assume any assumptions related to distribution. There are, however, some assumptions that are assumed in Mann-Whitney U-test. The following are the assumptions for Mann-Whitney U-test:

- Mann-Whitney U-test assumes that the sample drawn from the population is random.
- In Mann-Whitney U-test, independence within the samples and mutual independence is assumed.
- Ordinal measurement scale is assumed in Mann-Whitney U-test.

In the present study, Mann-Whitney test has been used to compare the opinion of bank executives/managers of public and private sector banks because the data is not normally distributed.
3.7 LIMITATIONS OF THE STUDY

- Any primary data based study through pre-tested questionnaire suffers from the basic limitation of possibility of difference between what is recorded and what is truth. It does not matter how carefully the interview has been conducted or how meticulously the questionnaire has been designed and field investigation carried out. It may have happened with the present study also, because sometimes the people may not deliberately report their true opinion due to some biasness.

- Non-availability of sampling frame consisting of total number of bankers in the selected banks of Punjab and Chandigarh (UT) is another limitation of the study.

- The bankers of only six banks were selected for the present study to know their awareness level and extent of usage of new performance measurement system (PMS) based on both financial and non-financial measures of the public and private sector banks. As a result, the generalization of the findings of present research should be considered carefully.

- The present research explores all the key performance indicators (KPIs) under various perspectives of performance scorecard while measuring the performance of the banks; there may still exist the possibility of missing certain KPIs under financial and non-financial perspectives.

- The information based on the secondary data may suffer from all the limitations inherent with the secondary data.

- There is possibility that all the information which could have been useful for this research work may not have been supplied by the respondent bankers due to the secrecy norms of the banks, and thus, the results are based on the available information only.

- The study also suffers from the limitation that survey methodology measures only the belief and not the necessary action.