CHAPTER- 3
RESEARCH METHODOLOGY

Research design is the framework that is advised to guide the collection and analysis of data collected to solve the problem. Research design is similar to the role of an architect in a building project (Robson, 2002). Research design is, therefore, the general plan that will describe how the researcher intends to achieve his research aims, answer his research questions, and so on. Whereas, Research methodology specifies the method for acquiring the information needed to structure or solve the problem at hand. By methodology of any research means the selection of the representative sample, collection of relevant data, application of appropriate research tools and techniques for analysis, and interpretation of the same for scientific investigation of the problem. Research methodology forms the basis for justification of the research design that the researcher formulates and the specific tactics or methods of data gathering that are used. (Valerie, 2011) In fact, research design or plan is the conceptual structure within which the research is conducted, it constitutes blueprint for the collection, measurement and analysis of data.

Keeping in view the objectives set for the study, the research methodology for the present study has been presented to include the sample design, data collection and various statistical tools of analysis used to make comparative investigation and evaluation of the HRM practices and job satisfaction level in public and private commercial banks in India.

3.1 NEED OF THE STUDY

Since independence, India witnessed an explosive growth in the Indian banking sector with a unique phenomenon not found easily anywhere in the world. This enormous growth could not keep proper control on many of the important factors which are essential for effective functioning of this sector. Presently, the banks all over the world are facing serious problems with the increased dependency on information technology, namely, increasing volume of NPAs, increased number of bank failures in U.S., declining profitability trend, deteriorating customer service, and employee-employer relationship. The analysis of these problems brings home a single factor mainly responsible for these problems and that is human factor and its management. In the absence of proper personnel management a discontented workforce emerged which strengthened the trade union activities. Any service sector cannot afford to neglect its ‘Human Element’ because the efficiency of its employees determines, to a great extent, the quality of service rendered and its return. With day-to-day increasing pressures of competitive market forces, there is an urge to become cost effective and cost efficient. The human sources in the banking sector are
not only important, but expensive and delicate. Adoption of improved technologies by upgrading their work methods, work norms, technical and managerial skills and employees’ motivation to face up to the fast emerging challenges, has become the need of the hour.

3.2 RESEARCH OBJECTIVES

The present research is focused on the various aspects of Human Resource Management (HRM) practices adopted by commercial banks in India. It proposes to make a comparative analysis of human resource management practices relating to employees’ recruitment, selection, promotion, compensation packages, training and development practices in the public and private sector commercial banks in India; and the way these are linked with employees' job satisfaction. The broad objectives of the proposed study are:

1. To study HRM policies, practices and trends in selected commercial banks.
2. To compare HRM policies and practices of public and private sector banks.
3. To study and compare perceptions of bank officers regarding HRM policies and practices in selected banks.
4. To study and compare the perceptions of employees regarding HRM policies and practices in selected banks.
5. To study and compare the level of employees' job satisfaction in relation to HRM practices in selected public and private sector banks.
6. To suggest ways to improve HRM practices in commercial banks in India.

In order to achieve the specific objectives of the study, following research methodology has been used:

Locale of the Study

The state of Punjab is the locale of the study.

3.3 SAMPLE DESIGN

A qualitative approach has been followed for the purpose of this research work. The sampling gives liberty to the researcher to minimize the population; and every sincere effort has been made to make the sample size real representative of the total population.

3.3.1 Sampling Design of Selected Banks

The sampling design of the study is based on multi-stage stratified purposive sampling technique. A “multi-stage purposive sample” is constructed by taking a series of simple samples in stages. In multi-stage sampling, a large area such as a country is first divided into smaller regions, and a sample of these regions is collected. In the second stage, a random sample of smaller areas is taken from within each of the regions chosen in the first stage. Then, in the third
stage, a sample of even smaller areas is taken from within each of the areas chosen in the second stage. If these areas are sufficiently small for the purpose of the study, then the researcher might stop at the third stage. If not, he or she may continue to sample from the areas chosen in the third stage, etc., until appropriately small areas have been chosen. Similarly, in this study, out of the whole country the State of Punjab has been chosen as the first step. In Punjab, choosing the public sector and private sector banks is the next stage of sampling; and selecting the four sample banks out of the total public and private sector commercial banks is the third step of sampling; and the selection of sample respondents (both employees and bank officers) has been done at the 4th stage of sampling.

3.3.2 Selection of Sample Banks under Study

The universe of the study is all public and private sector commercial banks operating in India, but due to non-feasibility and time constraint, the scope of the study has been restricted only to four commercial banks operating in the state of Punjab. A sampling frame of four commercial banks was prepared comprising two each from the public and private sector commercial banks out of the total 26 public sector commercial banks and 21 private sector commercial banks operating in India. The criterion adopted for the selection of private sector banks was their year of incorporation and size of their market share. The banks selected as sample units for the present study are listed as under:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Public Sector Banks</th>
<th>Private Sector Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>State Bank of Patiala</td>
<td>HDFC Bank</td>
</tr>
<tr>
<td>2.</td>
<td>Punjab National Bank</td>
<td>Axis Bank</td>
</tr>
<tr>
<td>Total</td>
<td>02</td>
<td>02</td>
</tr>
</tbody>
</table>

3.3.3 Respondents

In order to achieve the set objectives of this research, primary data has been collected from the respondent officers and employees of the selected banks representing the following two cadres of the staff:

1. Workmen (Defined as ‘Employees’ for the purpose of present research), and
2. Officers.

1. Workmen include subordinate staff, clerical or award staff consisting of senior assistants, special assistants and single window operators, whereas sub-staff consists of record keepers, gunmen, sweepers and peon-cum-frash or helpers, and technical staff. Thus, the workmen staff represents the following different cadres:
(i) Clerks
(ii) Special Assistants promoted from clerks
(iii) Sub-staff
(iv) Part-time employees requisitioned locally by AGM or Controller
(v) Armed Guards.

2. Officers are classified into the following categories:
   A) Officers in General Scales (Scale-I to Scale-VII)

      General officers are first recruited in Scale-I as Probationary Officers only. The officers in commercial banks are broadly categorized into the following three groups:

      (a) **Senior Management Cadre**
          i. Executive Director
          ii. Chief General Manager

      (b) **Middle Management Cadre**
          i. General Manager
          ii. Deputy General Manager

      (c) **Junior Management Cadre**
          i. Assistant General Manager
          ii. Manager
          iii. Assistant Manager.

      B) Specialist officers are recruited directly to any of the scales.

In this study, the respondent employees have been taken from all the categories of Workmen; Clerical or Award staff, and while the respondent officers represent from Scale-I to Scale-VII general officers including Technical and Specialist officers.

In order to examine and compare the employees' perceptions in relation to the HRM practices, and to evaluate the level of employees' job satisfaction in relation to HRM practices in both public and private sector banks, mainly primary data has been used. A structured questionnaire was framed and administered on the sample employees. However, in order to study and compare perceptions of bank officers regarding HRM policies and practices, another questionnaire was framed and administered on sample bank officers in selected bank. The entire manpower working in all these four banks (two public sector and two private sector commercial banks) forms the population under study. The selection of respondents was ultimately made on the basis of convenience- cum-judgment method of sampling as shown in Table 3.2 given below:
### Table 3.2
Staff Strength of Sample Units and Number of Sample Respondents

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the Sample Unit (Bank)</th>
<th>Total Staff Strength as on 31st March, 2012</th>
<th>Branch Network as on 31st March, 2012</th>
<th>Number of Employees included as Sample Respondents</th>
<th>Number of Bank Officers included as Sample Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>State Bank of Patiala</td>
<td>13573</td>
<td>1055</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>2.</td>
<td>Punjab National Bank</td>
<td>57997</td>
<td>5669</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>3.</td>
<td>HDFC Bank</td>
<td>66076</td>
<td>2544</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>4.</td>
<td>Axis Bank</td>
<td>31738</td>
<td>1620</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total Sample Size</strong></td>
<td><strong>200</strong></td>
<td><strong>60</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3.3.4 Selection of Respondent Employees

Of the two public sector banks under study, 100 employees were randomly selected. Similarly, 100 employees were randomly selected from the two selected private sector banks. In this way, total numbers of selected respondent employees were 200.

#### 3.3.5 Selection of Respondent Bank Officers

As far as selection of respondent bank officers is concerned, a sample of 30 bank officers has been taken randomly from the two public sector banks under study. Similarly, an equal number of bank officers from the two selected private sector banks, have been taken randomly. Thus, total number of such respondents came to be 60.

#### 3.4 SELECTION AND CONSTRUCTION OF VARIABLES

So as to identify different HRM practices the following items are pooled which have been derived from a variety of sources including Hornsby and Kurato (1990), Osterman (1994), Pfeffer (1994), Arthur (1994), Huselid, et al., (1997). The present research aims to make a comparative analysis of human resource management practices relating to employees’ recruitment, selection, promotion, compensation packages, training and development practices in the public and private sector commercial banks in India, and the way these are linked with employees' job satisfaction. As such, the following variables relating to HRM policies, the practices being followed and job satisfaction level in the sample banks lead the researcher to make a distinction between public and private sector commercial banks based on the response of selected employees and bank officers:
• Recruitment and selection;
• Promotion Policies;
• Compensation practices; and
• Training and development practices.

With an aim to analyze the influence of HRM practices on job satisfaction, the job satisfaction is measured at each level through a number of variables mentioned above, thus, avoiding the risk of possible biasness associated with reliance on a single variable. The main endeavour of this study is to examine the relationship and nature of relationship between the human resource management (HRM) practices (recruitment, selection, promotion, and compensation, training and development practices) and employees’ job satisfaction in the public and private sector commercial banks in India.

3.5 PRIMARY DATA COLLECTION AND TOOLS OF ANALYSIS

The primary as well as secondary data has been used to achieve the objectives of the study. Secondary data has been used mainly to study, the recruitment, selection and promotion, compensation packages, training and development practices and policies of selected banks. Such data has been gathered from the published documents including annual reports, manuals of the banks, office records of different Training Institutes, divisional offices, and head offices of the sample banks and from other available sources.

3.5.1 Source of Primary Data

The primary data was drawn from the respondent employees and bank officers working in different branches, service offices, training centres, specialized branches and offices, regional offices and head offices of both public and private sector commercial banks situated in the state of Punjab. As many as 232 employees and 73 bank officers working in the selected banks were approached for the purpose of required data. The sample taken for the present study consists of 200 employees (50 each representing two banks from the public sector and equal number of banks from the private sector); and 60 bank officers (15 each representing all the said four banks in an equal proportion). The response percentage in the case of employees is 86.21 per cent, while it is 82.19 per cent in bank officers. Their response was found to be complete in all respects for the
Before distributing the final questionnaire, it was checked with two banks to find out whether the questionnaire needs further improvements. A total of 232 questionnaires meant for bank employees were distributed. Of these, 122 from public sector banks and 110 from private sector banks were received. After the scrutiny of these questionnaires, 22 questionnaires from public sector banks and 10 questionnaires from private sector banks were rejected on account of incomplete responses. Finally, 200 questionnaires complete in all respects from this category were used for the purpose of present study. Similarly, a total of 73 questionnaires meant for bank officers were distributed. This response pertained to 36 bank officers from public sector banks and 37 from private sector banks. After the scrutiny of these questionnaires, 06 questionnaires from public sector banks and 07 questionnaires from private sector banks were rejected on account of incomplete responses. Finally, 60 questionnaires complete in every respect were used for the purpose of present research.

3.5.2 Questionnaires

In order to obtain the primary data, the following two sets of questionnaires were administered to the respondents:

Questionnaire-I: For respondent employees

Questionnaire-II: For respondent Bank officers

Pre-Testing and Drafting Final Questionnaires

The preliminary draft of Questionnaire-I and Questionnaire-II was pre-tested on 20 employees and 06 bank officers from both the public and private sector commercial banks respectively. This helped in improving and finalising both the sets of questionnaires. The respondents were asked to evaluate their answers on all the items included in the final questionnaires. All the items were measured on a five-point Likert scale.

The pre-testing of questionnaires emphasized on various other factors influencing the perceptions and expectations of the respondents relating to issues on HRM practices and policies. So, the final questionnaires included the items regarding these measures also. Table 3.3 exhibits the details about variables undertaken for the study. The variables consist of 127 statements in Questionnaire-I for respondent employees which form the basis for collection of primary data.
Table 3.3
Variables Undertaken for Research in Questionnaire-I (For Respondent Employees)

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Questions</th>
<th>Source</th>
<th>Numbers of Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>11 (1.1 to 1.11)</td>
<td>Self-constructed</td>
<td>11</td>
</tr>
<tr>
<td>Overall HRM</td>
<td>02 [2.6 (1-2)]</td>
<td>Snell and Dean (1992)</td>
<td>02</td>
</tr>
<tr>
<td>Recruitment (Basic statements)</td>
<td>08 (2.1 to 2.5),[2.6 (3-5)]</td>
<td>Snell and Dean (1992)</td>
<td>08</td>
</tr>
<tr>
<td>Selection</td>
<td>10 [2.7 (1-10)]</td>
<td>Tahir Masood Quereshi (2006)</td>
<td>10</td>
</tr>
<tr>
<td>Promotion</td>
<td>02 [2.8(1-2)]</td>
<td>Snell and Dean (1992)</td>
<td>02</td>
</tr>
<tr>
<td>Compensation:</td>
<td>03 [3.1(1-3)]</td>
<td>Singh (2004); Mark Christopher (2008); Bose (2002);</td>
<td>03</td>
</tr>
<tr>
<td>Compensation policies and effectiveness</td>
<td>24 [3.2( is now-1-10, should be1-10)],[3.3(1-4)]</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Non-financial incentives</td>
<td>02 [3.4.(1-2)]</td>
<td>Snell and Dean (1992)</td>
<td>02</td>
</tr>
<tr>
<td>Training and Development:</td>
<td>01(4.1)</td>
<td>Snell and Dean (1992)</td>
<td>01</td>
</tr>
<tr>
<td>Policy</td>
<td>01(4.2.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need analysis</td>
<td>02 (4.2.2).4.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional design</td>
<td>05[4.3.(1-5)]</td>
<td>Tahir Masood Quereshi (2006)</td>
<td>05</td>
</tr>
<tr>
<td>Pre-training practices</td>
<td>04[4.4.(1-4)]</td>
<td></td>
<td>04</td>
</tr>
<tr>
<td>Training needs</td>
<td>03 [4.5.(1-3)]</td>
<td></td>
<td>03</td>
</tr>
<tr>
<td>Training programme aims to achieve</td>
<td>07 [4.6.(1-07)]</td>
<td></td>
<td>07</td>
</tr>
<tr>
<td>Training practices</td>
<td>08 [4.7.(1-08)]</td>
<td></td>
<td>08</td>
</tr>
<tr>
<td>Training programmes are able to bring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction:</td>
<td>05 [ 5.1.(1-5)]</td>
<td>Dubey, et al.(1989); Nath (1988)</td>
<td>05</td>
</tr>
<tr>
<td>Pay and promotions</td>
<td>05 [5.1.(6-10)]</td>
<td></td>
<td>05</td>
</tr>
<tr>
<td>Organisational aspects</td>
<td>04 [5.1.(11-14)]</td>
<td></td>
<td>04</td>
</tr>
<tr>
<td>Supervisor behaviour</td>
<td>06 [5.1.(15-20)]</td>
<td></td>
<td>06</td>
</tr>
<tr>
<td>Job and working conditions</td>
<td>05 [5.1.(21-25)]</td>
<td></td>
<td>05</td>
</tr>
<tr>
<td>Co-workers behaviour</td>
<td>08 [5.2.(1-8)]</td>
<td></td>
<td>09</td>
</tr>
<tr>
<td>HRM Policies and Practices and Job Satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>127</td>
</tr>
</tbody>
</table>

Table 3.4 as given below carries the details about variables undertaken for the study. These variables consist of 85 statements in Questionnaire-II for respondent bank officers which form the basis for the purpose of collection of primary data for analysis.
### Table 3.4
Variables Undertaken for Research in Questionnaire-II (For Respondent Bank Officers)

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Questions</th>
<th>Source</th>
<th>Numbers of Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>07 [1.1 to 1.07]</td>
<td>Self-constructed</td>
<td>07</td>
</tr>
<tr>
<td>Overall HRM</td>
<td>2.3(1-2)</td>
<td>Snell and Dean (1992)</td>
<td>02</td>
</tr>
<tr>
<td>Recruitment (Basic statements)</td>
<td>02 (2.1 to 2.2)</td>
<td>Snell and Dean (1992)</td>
<td>02</td>
</tr>
<tr>
<td>Recruitment and Selection</td>
<td>13 [2.3(3-5)], 2.4(1-10)</td>
<td>Snell and Dean (1992) Tahir Masood Quereshi (2006)</td>
<td>13</td>
</tr>
<tr>
<td>Promotion</td>
<td>02 (2.5,2.6)</td>
<td>Snell and Dean (1992)</td>
<td>02</td>
</tr>
<tr>
<td>Compensation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compensation policies and effectiveness</td>
<td>03 [3.1(1-3)]</td>
<td>Singh (2004); Mark Christopher (2008); Bose (2002); Kelley Snell and Dean (1992)</td>
<td>03</td>
</tr>
<tr>
<td>(Perceptions and Expectations)</td>
<td>24 [3.2 (is now-1-10, should be-1-10)], [3.3(1-4)]</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Non-financial incentives</td>
<td>02 [3.4.(1-2)]</td>
<td></td>
<td>02</td>
</tr>
<tr>
<td>Training and Development:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy</td>
<td>01(4.1)</td>
<td>Snell and Dean (1992)</td>
<td>01</td>
</tr>
<tr>
<td>Need analysis</td>
<td>01(4.2.1)</td>
<td></td>
<td>01</td>
</tr>
<tr>
<td>Instructional design</td>
<td>02 (4.2.2), 4.11</td>
<td>Tahir Masood Quereshi (2006)</td>
<td>02</td>
</tr>
<tr>
<td>Training needs</td>
<td>03 [4.3.(1-3)]</td>
<td></td>
<td>05</td>
</tr>
<tr>
<td>Pre-training practices</td>
<td>05 [4.4.(1-5)]</td>
<td></td>
<td>03</td>
</tr>
<tr>
<td>Training programme aims to achieve</td>
<td>03 [4.5.(1-3)]</td>
<td></td>
<td>03</td>
</tr>
<tr>
<td>Training programmes are able to bring</td>
<td>07 [4.6.(1-07)]</td>
<td></td>
<td>07</td>
</tr>
<tr>
<td>Training programmes are able to bring</td>
<td>08 [4.7.(1-08)]</td>
<td></td>
<td>08</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>85</strong></td>
</tr>
</tbody>
</table>

#### 3.5.3 Scoring Procedure Followed in HRM Practices and Job Satisfaction

The study depends mainly on the primary data collected through a well-structured questionnaire administered to the respondents. The study is confined to a few selected public and private sector commercial banks situated in Punjab. Two banks each for the public and private sector banks located in the state of Punjab have been selected for the study.

**A. HRM Practices**

The response to the questions on HRM practices and job satisfaction has been measured on a five-point Likert scale. The scale measures the HRM practices as under:

(a) Overall HRM practices, Training and development (Pre-training practices), Compensation Practices (Is Now and Should be), Training programme aims to achieve, Effectiveness of Compensation practices and Training programme able to bring: To a great extent (5) to Not at all (1).
(b) Recruitment and Selection, Overall Job satisfaction, Training programme: Strongly agree (5) to Strongly disagree (1).

(c) Opinions regarding Financial Incentives, Non-Financial incentives, Job Satisfaction and HRM practices: Highly satisfied (5) to Highly dissatisfied (1).

B. Job Satisfaction

The job satisfaction scale consisted of 25 statements. This part of both the questionnaires has been measured on a five-point Likert scale. The scale is a standardized tool for measuring job satisfaction [Developed by Shamshad Ahmed, Department of Psychology, with reference to: job satisfaction scale developed by Dubey et al. (1989) and Nath (1988)]. The purpose of this test was to measure job satisfaction in industrial and banking set-up. Test-retest reliability of the scale is 0.64 and its split half reliability coefficient is 0.72. This part of the questionnaire is independent of demographics like age, education and salary, etc. The same scale has been applied here for the purpose of examining statements 01 to 25 on job satisfaction in the Questionnaires-I, based on five predominant factors as shown below:

(i) **Pay and promotion**, as the first factor, contains 05 identified items, viz. “As per work requirement my pay is fair”, “Comparing the salary for similar jobs in other organizations I feel my pay is better”, “My pay is enough for providing necessary things in my life”, “I have been getting promotion as per my qualifications and experience”, and “Promotions are made on merit in this organization”.

(ii) **Organisation aspects**, as the second major factor, contain 5 items, viz. “I feel proud for working in this organization”, “I think this organization treats its employees better than any other organization”, “I feel that I have opportunity to present my problems to the management”, “I have full confidence in the management of this organization”, and “Favouritism does not have any role to play in this organization”.

(iii) **Supervisor behavior**, as the third factor, has been contains 4 items, viz. “On the whole, I am satisfied with the general supervision in my department”, “My supervisor behaves properly with me”, “My superior keeps me informed about all the policies/happenings of the organization, and “My superiors take into account my wishes as well as work done”.

(iv) **Job and working conditions**, as the 4th factor, contains 6 items, viz. “I feel that my job is reasonably secure as long as I do good work”, “My present job is as per my ability/qualifications and experience”, “I usually feel fresh at the end of the day’s work”, “Working conditions in this organization are satisfactory”, “My job has helped me to learn more skills, and “On the whole I feel I have good prospects or advancement in my job”.

67
Co-workers’ behavior, as the fifth factor, carries 5 statements, viz. “My co-workers will inform me of what happened in my department when I was not on duty”, “There is high team spirit in the work group”, “I am glad to work with all my co-workers in my department”, “I often ask the opinion of my co-workers who work in my unit”, and “Communication between me and my coworkers is free and open”.

The responses on the job satisfaction inventory were assigned on a five-point Likert scale containing categories of Strongly agree (5) Agree (4) Neutral (3) Disagree (2) and Strongly disagree (1) which denote their score weightage. Thus, scores on job satisfaction inventory for low, medium and higher level of satisfaction have been determined. The summated scores range between 25 and 125. And overall job satisfaction in these five areas has been measured as under:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Total of Summated Scores</th>
<th>Level of Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0-25</td>
<td>Low Level</td>
</tr>
<tr>
<td>2.</td>
<td>26-50</td>
<td>To some extent</td>
</tr>
<tr>
<td>3.</td>
<td>51-75</td>
<td>To moderate extent</td>
</tr>
<tr>
<td>4.</td>
<td>76-100</td>
<td>To a large extent</td>
</tr>
<tr>
<td>5.</td>
<td>101-125</td>
<td>To a great extent</td>
</tr>
</tbody>
</table>

The primary data collected by way of administering Questionnaire-I and Questionnaire-II has been analyzed and interpreted by using various statistical tools and techniques. Both simple as well as advanced statistical techniques were applied to analyze the collected data. Simple tools like frequencies, percentages, averages, standard deviation, Mean Difference, Weighted average, etc.; and advanced techniques such as t-test, chi-square test, and Z-test have been applied to analyse the data. The Mann-Whitney test has been applied due to the skewed data in some cases.

A brief description of some important tools and the formulas is given as under:

**Mean**

\[ \text{Mean (} \bar{x} \text{)} = \frac{\sum x}{N} \]

Where,

- \( \Sigma \) = Symbol for summation
- \( \sum x \) = Sum of all the values of the variable \( X \)
- \( N \) = Number of observations.

**Standard Deviation**

\[ \text{S.D. (} \sigma \text{)} = \sqrt{\frac{\sum x^2}{n} - (\bar{x})^2} \]

Where,

- \( x = (x - \bar{x}) \), \( \bar{x} \) is the mean of the series and
- \( (x - \bar{x}) \) is the deviation from the mean.
N= Number of items.

**Mean Difference**

\[ \text{Mean ( } \bar{x} \text{ ) Public Sector Banks - Mean ( } \bar{x} \text{ ) Private Sector Banks} \]

**Weighted Average**

\[ \text{Weighted Average Mean: } \frac{w_1x_1 + w_2x_2 + \ldots + w_nx_n}{w_1 + w_2 + \ldots + w_n} = \frac{\sum wx}{\sum w} \]

It is generally, denoted by \( \bar{x}_w \) or \( X_w \)

where, \( X_w = \text{Weighted Arithmetic Mean} \)

\[ X = \text{the variable values} \]
\[ w = \text{the weights attached to variable values} \]

**Tests of Significance**

Brief description and formulas of some important tools are given as under:

**Students’ t-test**

The Pearson’s correlation and t-test were used due to normally distributed data of various HRM and job satisfaction dimensions. To compare two mean values, students’ t-test was applied as under:

\[ t = \frac{X_1 - X_2}{SE (X_1 - X_2)} \]

\[ SE (X_1 - X_2) = \sqrt{\frac{1}{n_1} + \frac{1}{n_2}} \]

\[ S = \sqrt{\frac{SD_1^2(n_1-1) + SD_2^2(n_2-1)}{n_1 + n_2 - 2}} \]

Where,

\[ SE = \text{Standard error of mean difference} \]
\[ X_1 = \text{Mean value in 1st group} \]
\[ X_2 = \text{Mean value in 2nd group} \]
\[ SD_1 = \text{Standard deviation in 1st group} \]
\[ SD_2 = \text{Standard deviation in 2nd group} \]
\[ S = \text{Common standard deviation} \]
\[ n_1 = \text{Number of observations in 1st group} \]
\[ n_2 = \text{Number of observations in 2nd group} \]
Chi-Square Test

In order to see the association between two-way distributions of respondents, Chi-square test was applied by using the following formula:

\[ x^2 = \sum \frac{(O - E)^2}{E} \]

Where,

\[ \chi^2 = \text{Chi-Square value} \]
\[ O = \text{Observed frequency} \]
\[ E = \text{Expected frequency} \]
\[ \Sigma = \text{Symbol for Summation}. \]

paired t-test

In order to assess the significance of mean gap between the expectations and perceptions of the respondents with in the same group, paired t-test has been used as under:

\[ t = \frac{d \sqrt{n}}{s} \]

where,

\[ d = \text{the mean of difference between perceptions and expectations} \]
\[ s = \text{standard deviation of the difference} \]

Z - test

In order to compare two proportions of respondents, Z-test, i.e., test of proportions was applied as under:

\[ Z = \frac{|P_1 - P_2|}{\text{SE of } (P_1-P_2)} \]

\[ \text{S.E. of } (P_1-P_2) = \sqrt{p \cdot q \cdot (1/N_1 + 1/N_2)} \]
\[ P = (P_1n_1 + P_2n_2) / (n_1+n_2) \]
\[ q = 1 - p \]

Where,

\[ P_1 = \text{Proportion of respondents in 1}\text{st group} \]
\[ P_2 = \text{Proportion of respondents in 2}\text{nd group} \]
**Wilcoxon-Mann-Whitney Test (U-test)**

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

Where,

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

### 3.6 SECONDARY DATA COLLECTION AND TOOLS OF ANALYSIS

The study is also based on the secondary data which has been collected from yearly publications of Indian Banks Association, Bombay; sample bank’s annual reports; quarterly reports of RBI; various journals related to banking industry; websites etc. In order to analyze the comparative profitability and efficiency of the public and private sector commercial banks during the period under study, i.e., 2002-03 to 2011-12, the public sector commercial banks have been categorised into two categories, \( i.e. \), Nationalised and its Associate banks (Including IDBI).

Similarly, the private sector banks are classified into Old private banks and New private banks. Two public sector banks, namely, State Bank of Patiala and Punjab National Bank; and two private commercial banks namely, HDFC Bank and Axis bank have been selected as sample units for the study. The study covers a span of 10 years, i.e., 2002-03 to 2011-12. Different statistical tools have been applied in order to analyse the secondary data such as ratios, time series, mean, standard deviations, variances, besides the compound annual growth rate (CAGR).

**Ratios:** Secondary data analysis is based on the figures culled out from the Annual Reports and Balance-sheets of both the public sector and the private sector banks as compiled by Indian Banks Association, Bombay. Data relates to 12 months period ending March every year, in respect of income, expenditure, profit and other related ratios. Components related to ratios include non-interest incomes as other incomes, establishment expenses relating to expenditure on salaries and other allowances paid to the staff, Operating expenses include establishment expenses, rent taxes and lighting, printing and stationary, advertisement and publicity, depreciation, insurance, etc.
Deposit per employee = \frac{\text{Total Deposits}}{\text{Total Number of Employees}}

Advances per employee = \frac{\text{Total Advances}}{\text{Total Number of Employees}}

Return on assets = \frac{\text{Total Profits}}{\text{Total Assets}}

Business per employee = \frac{\text{Total Business (Deposits and Advances)}}{\text{Total Number of Employees}}

Profit per employee = \frac{\text{Total Profits}}{\text{Total Number of Employees}}

Cost per employee = \frac{\text{Total Cost}}{\text{Total Number of Employees}}

Establishment expenses per employee = \frac{\text{Total Establishment Expenses}}{\text{Total Number of Employees}}

**Time Series:** Any sequence of measurement taken on a response, that is, variable over time is called a time series. Moris Hamburg defined that ‘a time series’ is a set of statistical observations arranged in a chronological order.

**Average or Mean**

\[ \text{Mean (} \bar{x} \text{)} = \frac{\sum x}{N} \]

Where,

\[ \sum = \text{Symbol for summation} \]

\[ \sum x = \text{Sum of series of observations} \]

\[ N = \text{Number of items} \]

**Standard Deviation**

\[ \text{S.D. (} \sigma \text{)} = \sqrt{\frac{\sum x^2}{n} - (\bar{x})^2} \]

Where,

\[ x = (x - \bar{x}), \ \bar{x} \text{ is the mean of the series} \]

\[ (x - \bar{x}) \text{ is the deviation from the mean} \]

\[ N = \text{Number of items} \]

**Variance**

\[ \sigma^2 = (\text{Standard Deviation})^2 \]
CAGR

The year-over-year growth rate of an item over a specified period of time is called Compound Annual Growth Rate (CAGR). The compound annual growth rate is calculated by taking the 9th root of the total percentage growth rate.

\[ \text{where,} \]

‘n’ is the number of years in the period being considered.

The compound annual growth rate (CAGR) is a useful measure of growth over multiple time periods. The formula for CAGR is:

\[ \text{CAGR} = \left( \frac{EV}{BV} \right)^{1/n} - 1 \]

Where,

EV = Items’ ending value
BV = Items’ beginning value
n = Number of years in the period being considered under study.

Cronbach’s Alpha (\( \alpha \))

\[ \text{Cronbach’s} \ \alpha = \frac{N}{N-1} \frac{\sigma_x^2 - \sum_{i=1}^{N} \sigma_{yi}^2}{\sigma_x^2} \]

Where, \( N \) is the number of components, \( \sigma_x^2 \) is the variance of the observed total test scores, and \( \sigma_{yi}^2 \) is the variance of component i.

Coefficient of Variation (C.V.)

To test the significant gap between perception and expectation within public sector and private sector, the following t-test was used:

\[ \text{C.V.} = \frac{\bar{X} - \mu_H}{\sigma / \sqrt{n}} \text{ with d.f. } = (n-1) \]

where,

\[ S.D. \text{ or } \sigma = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \]

A study of HRM policies and practices of four sample banks has also been done through ‘content analysis’. The twenty-nine different HRM areas have been identified with respect to recruitment, selection and promotion, compensation, training and development policies and practices, and compared through ‘content analysis’.

Comparative analysis of HRM policies and practices of public and private sector commercial banks has been done through ‘content analysis. On the whole, thirty different HRM areas with respect to recruitment, selection and promotion, compensation, training and
development policies of public and private commercial banks have been identified and compared through ‘content analysis’.

3.7 LIMITATIONS OF THE STUDY

Every research has its own limitations and this study is also no exception. The present study has the following limitations:

1. The responses for the study have been solicited from the state of Punjab only. The perceptions and expectations of the bank employees and officers in Punjab may vary from those of the rest of India.

2. The bank employees and officers of only four commercial banks were selected in order to know their perceptions and expectations to compare HRM Practices and their job satisfaction levels. As a result, the generalization of the findings of the present research should be considered carefully.

3. Any study which is based on the primary data collected through the pre-designed questionnaire suffers from the basic limitation of possibility of difference between what is recorded and what is true because the people may not deliberately report their true opinion due to some reasons or other service related issues, no matter how carefully the interviews have been conducted.

4. The information collected for the secondary data based study carries all the limitations inherent with the secondary data.

5. This research work assessed only the employees’ recruitment, selection, promotion, compensation packages, training and development practices, and job satisfaction. Other areas of interest like performance appraisal, job commitment, strategic HRM, employees productivity, HRM effectiveness, work-life balance, work-life culture, work-life effectiveness, industrial relations, employees’ turnout, labour welfare, etc. have not been included in this study due to the financial and time constraints.

*****