CHAPTER 3
RESEARCH DESIGN

Chapter 3 vividly discusses the research design applied for the study. It addresses the research questions, explains the scope and objectives of the research, dependent and independent variables selected for the study, hypotheses formulation, pilot study, reliability and validity of the research instrument, limitations of the study and finally the chapter scheme of the study.

The present research problem addresses several questions relating to Benchmarking and HR Practices such as, what are the practices to be benchmarked in different sectors like IT, Manufacturing and Education?; What are the perceptions of employees and the HR Managers about HR Practices in the three sectors?; What is the relationship between HR practices and Job Satisfaction?; What is the relationship between HR Practices and Talent Management? It also addresses the impact of HR Practices on Job satisfaction and Talent Management across different sectors.

3.1. Statement of the problem

HRM is the key factor for increasing employees’ productivity i.e., HR Practices turn employees into a resource for development and a source of competitiveness. Employees are considered as the basic source of competitive advantage and hence the organizations find it extremely important to invest in Recruitment and Selection, training and development, compensation and benefits and Employee retention. The organizations constantly strive to improve and implement better HR practices to achieve the above objectives. According to Struebing (1996), best practice becomes a source to help companies identify their weak areas and examine how other companies have improved under similar situations or systems. Benchmarking is a tool used to compare the practices and processes of different organizations thus helping in evolving best practices. Even though the concept of benchmarking actually evolved from the Manufacturing sector, today it is a tool which is used for various processes. One such process is HR, where the practices need to be benchmarked across various sectors. It is essential to understand the best practices across various sectors and customize the same to the respective sectors. With global standards increasing every day, there is need to
have a set of HR practices which suits both employees and respective organizations’. Benchmarking the HR practices across various sectors will help the organizations to compare their practices with that of the others’. It will also further assist them in adopting the best practices in the current work environment and thus retaining the best talent.

3.2. Objectives of the Study

The objectives of the current study are:-

- To study and compare the HR practices among IT, Manufacturing and Education sectors.
- To study and compare the perception of employees and the HR managers about HR Practices in IT, Manufacturing and Education sectors.
- To study the relationship between HR practices and Job Satisfaction in all the three sectors
- To find out the relationship between HR practices and Talent Management across three sectors
- To study the impact of HR practices on Job Satisfaction in all the three sectors
- To study the impact of HR practices on Talent management across three sectors
- To evolve the best practices in IT, Manufacturing and Education sectors.

3.3. Scope of the Research

The scope of the present study is limited to the IT companies, Manufacturing concerns and Educational institutions offering Masters’ programme in Business Administration in Bangalore, Karnataka, India. The IT companies chosen were part of the NASSCOM and the Large Manufacturing concerns were chosen from the list of Bangalore Chamber of Commerce and Industry, Bangalore, Karnataka, India. The Educational institutions chosen for the study were accredited either by the NAAC or the NBA.
3.4. **Significance of the research**

This research aims to understand the best HR practices prevailing in the IT, the Manufacturing and Education Sectors. Given the present scenario, there is need for every organization to be competent in satisfying both the internal as well as the external customers. The tangible and the intangible value created by the organization in the minds of the employees play a dominant role in enhancing morale of individual employee and the productivity of the organization on the whole. This study provides significant insight in benchmarking the HR practices which are not prevalent in the respective sector and adopt best HR practice by which retention of knowledgeable employees becomes easy.

3.5. **Independent and Dependent Variables**

An independent variable is one “that influences the dependent variable in either positive or a negative way” (Cavana et al., 2001, Sekaran, 1992). Dependent variables are the ones that are observed and measured in response to the independent variable. The independent and the dependent variables are listed below:

3.5.1. **Independent variables**
- Recruitment and Selection (RAS)
- Training and Development (TAD)
- Compensation and Fringe Benefits (CFB)
- Performance Appraisal (PA)
- Employee Wellness (EW)
- Career Progression and Retention (CPR)
- Employee Engagement (EE)
- Knowledge Management (KM)
- Entertainment at Workplace (EAW)

3.5.2. **Dependent Variables**
- Job Satisfaction (JS)
- Talent Management (TM)
3.6. Hypotheses
The following four hypotheses are formulated in the present research study.

**Hypothesis I:** There is a significant difference in the mean values of perceived opinion among employees of varying experience levels from IT, Manufacturing and Education sector with respect to the RAS, TAD, CFB, PA, EW, CPR, EE, KM, EAW, JS and TM.

**Hypothesis II:** There is a significant difference in the perceived opinion about HR Practices between the Employees and HR managers in the IT, Manufacturing and Education sector.

**Hypothesis III:** HR practices have a significant impact on Job Satisfaction among employees in the IT, Manufacturing and Education sectors.

**Hypothesis IV:** HR practices have a significant impact on Talent Management among employees in the IT, Manufacturing and Education sectors.

**Hypothesis III and Hypothesis IV are validated using Structural Equation Modeling (SEM) (Page no. 155)**

3.7. Operational Definitions

**Information technology services:** Information technology is defined as the “The study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware." IT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit, and securely retrieve information.

**Large Manufacturing Organization:** Manufacturing is the process of converting raw material, components, or parts into finished goods that meet customer’s expectations or specifications. It commonly employs a man-machine setup with division of labour in a large scale production. Large Manufacturing Organizations are large in terms of
operations in various countries, in terms of number of employees, etc. In this study a large Manufacturing company means, organizations employing more than 1000 employees.

**Competitive Benchmarking:** Continuous process of comparing a firm's practices and performance measures with that of its most successful competitor/s.

**Employee Wellness:** It is a company program offering benefits, activities, or training, to improve and promote employees' health and fitness. A wellness program can include wellness benefits such as fitness training, company sponsored athletics and sports teams, health Education, and life improvement classes. It also includes prevention of mental health problems by stress management.

**Employee Engagement:** An "engaged employee" is one who is fully involved in, and enthusiastic about their work, and thus will act in a way that furthers their organization's interests. Employee engagement refers to a condition where the employees are fully engrossed in their work and are emotionally attached to their organization.

**Knowledge Management:** Knowledge management is the explicit control and management of knowledge within an organization aimed at achieving the company’s objectives.

**Talent Management:** It is defined as set of integrated of ensuring that an organization has a constant supply of highly productive employees in the right job at the right time.

3.8. **Methodology**

A two stage research design was proposed for the present study. It is both an exploratory and descriptive study which is considered to be ex-post facto research. Exploration was done in the first stage to list the items to be used in item analysis and to develop the final questionnaire.
3.9.1. **Exploratory Study**

This study requires respondents who are competent and also can contribute novel ideas. A group of respondents were carefully selected to ensure a fair representation of different types of experience levels. The researcher along with the guide prepared a list of respondents from the IT, Manufacturing and the Education sectors which helped in ascertaining the list of items to be considered for the study and also to develop a flawless questionnaire.

3.9.2. **Descriptive study**

In contrast to exploratory studies, descriptive studies are typically structures with clearly stated hypotheses and statistical techniques/tools used for testing the hypotheses.

3.10. **Population**

The population is defined in terms of (a) element, (b) units, (c) extent and (d) time

(a) **Elements**

(1) Employees who are working in the IT companies, Manufacturing organizations and Educational institutions were considered for the study. They were drawn from all the levels of hierarchy to ensure a fair representation.

(2) HR managers from the IT companies and the Manufacturing concerns were taken for the study. In the Educational institutions, wherever possible the HR managers’ views are elicited, but many of the Educational institutions do not have a HR manager on role. In such cases, senior staffs in the administrative section and the institutional heads were contacted to extract information.

(b) **Units of the study**

Top 10 Companies as listed in the NASSCOM, Top 10 Educational Institutions as per the PGCET rankings and Top 10 Manufacturing Organizations as per the list provided by the Economic Times top 500 companies for 2012.
(c) **Extent**

IT companies, Manufacturing concerns and Educational institutions that are situated in Bangalore city, Karnataka, India.

(d) **Time**

The data collection was done for a period six months in the year 2012-2013.

3.11. **Frame of reference**

IT organizations considered for the above study deal with Engineering, R&D and Product Development. As per NASSCOM there are 18 companies in the above category. 10 top companies listed as per the rankings of NASSCOM are considered for the study.

The Economic Times publishes the ranking for Companies every year based on the revenue. There are 20 large Manufacturing organizations situated in Bangalore, Karnataka, India. Among them top 10 companies with Headquarters in Bangalore, Karnataka, India is considered for the study. Moreover it was ensured that all the 10 Companies are members of the Bangalore Chambers of Commerce and industry.

National Board of Accreditation and the National Assessment and Accreditation Centre accredit and grade colleges. As per the list 18 colleges in Bangalore have NAAC accreditation and 2 colleges have NBA accredited MBA Department. Top 10 colleges as per PGCET rankings are considered for the study.

3.12. **Sample**

Sampling provides a mechanism by which an estimate of a population’s characteristics can be obtained and based on probability; a numerical measure of the accuracy of the estimate can be given (Sprent, 1998).

Sampling was done in two phases. Stratified random sampling survey was adopted to elicit information from IT, Manufacturing and Education sectors. The Units for study was selected through stratified random sampling. Based on the frame of reference given in 3.13, the units for study was calculated using the formula,
\[ n_h = \left( \frac{N_s}{N} \right) \times n \]

where \( n_h \) is sample of the strata, \( N_s \) is the population of the strata/sector, \( N \) is the total population and \( n \) is total sample size.

Hence in the above study,

\( N_s \) for IT = 18, \( N_s \) for Manufacturing = 20 and \( N_s \) for Education sector = 18

\( N = 58 \) units (18+20+20 units from IT, Manufacturing and Education sector respectively)

\( n=30 \) units

Thus the numbers of units in IT, Manufacturing and Education sectors are

\[ n_{\text{IT}} = \left( \frac{18}{58} \right) \times 30 = 9.3 \text{ approximated to 9.} \]

\[ n_{\text{Mfg}} = \left( \frac{20}{58} \right) \times 30 = 10.3 \text{ approximated to 10} \]

\[ n_{\text{Edu}} = \left( \frac{20}{58} \right) \times 30 = 10.3 \text{ approximated to 10} \]

Hence 10 units from each sector were considered for the study.

This study has been conducted in two phases:

(a) Survey of employees in the IT sector, Educational institutions which offer Masters Programme in Business Administration and Manufacturing concerns.

The questionnaire was distributed to 250 employees in the IT sector and the Education sector and to 200 employees in the Manufacturing based on convenience sampling. 218 employees in the IT sector, 115 in the Manufacturing sector and 195 employees in the Education sector responded. The response rate was 87%, 58% and 78%, in IT, Manufacturing and Education sector respectively.

(b) Survey of HR managers/senior managers/administrative staff who handle the HR related activities in the organizations. 2 HR managers based on convenience sampling were taken from each company. Thus information was collected from 20 HR managers from each sector.

3.13. Research Instrument for Data collection

Structured questionnaire was used for primary data collection. Two questionnaires, one each for the Employees and HR managers’ were developed. Discussions with the research guide, academicians in the concerned field and the
literature survey helped in generating the potential scale of items relevant for the study. The questionnaire was discussed with the senior members of the IT, Manufacturing and the Education sector before the pilot study. The items were evolved through exploratory study. Cronbach’s Alpha reliability was done to ascertain the reliability of the questionnaire. It is discussed in detail in 3.17.2. The research attempts to measure the perception of both the employees and the HR managers to understand the best practices in each sector.

3.13.1. Measurement scale used:

Likert rating scale is used where 1= Strongly Disagree, 2=Disagree, 3=Neutral, 4= Agree and 5= Strongly Agree

3.14. Pilot Study

Prior to administering the questionnaire at large, a pilot study was conducted. The purpose of pilot test was to develop the final questionnaire so that the respondents will have no problem in responding properly. The pilot study questionnaire was sent to 50 employees and 3 HR Managers drawn from each sector.

3.14.1. Validity

Babbie (1990) defined validity as “the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration”. In other words validity means accuracy of measurement.

Content validity: “Content validity is the representative sampling adequacy of the content. This is the judgment of the researcher, backed by other experts or researchers or past authors in the field. Content validation is guided by a question: Is the content of this measure representative of the universe of content of the property measured” (Fred N Kerlinger, 1973). “In content validity, we essentially check the operationalization against the relevant content domain for the construct” (Trochim, 2003). There are three ways to achieve content validity (Cavana et al., 2001, Kumar, 1996), namely from the literature, from qualitative research and from the judgment of a panel of experts in the field.
As per the pilot study, each completed questionnaire was checked to ensure that the participants had no problem in understanding or answering the questions (Fink, A, 1995). It was ensured that the respondents followed all the instructions properly.

### 3.14.2. Reliability

Reliability is a measure of how a scale can be relied on to produce similar measurements every time the scale is used. A measure is considered reliable if it would give the same result over and over again.

- **Inter rater or the inter-observer reliability:** It is used to assess the degree to which different raters/observers give consistent estimates of the same phenomenon. The completed pilot study questionnaire was analyzed for percent agreement between the raters.

- **Test-retest reliability:** It is used to assess the consistency of the measure from one time to another. This is analyzed after the final data collection to find out whether there is consistency in responses from one time to another.

- **Cronbach Alpha Score:** The final questionnaire administered to the respondents tested for internal consistency after the final data collection. The most popular test of inter-item consistency reliability is the Cronbach’s coefficient $\alpha$, (Cronbach, 1994), the value of $\alpha$ ranges from 0 to 1. The nearer the value of $\alpha$ to 1, the better the reliability is. If the value is low, either there are too few items or there is very little commonality among the items. Typically, reliability coefficient of 0.7 or more is considered to be adequate (Cronbach, 1951, Nunnaly, 1978).

#### Table 3.1: Cronbach alpha Values

<table>
<thead>
<tr>
<th>Cronbach $\alpha$</th>
<th>Internal consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha \geq .9$</td>
<td>Excellent</td>
</tr>
<tr>
<td>$.9 &gt; \alpha \geq .8$</td>
<td>Good</td>
</tr>
<tr>
<td>$.8 &gt; \alpha \geq .7$</td>
<td>Acceptable</td>
</tr>
<tr>
<td>$.7 &gt; \alpha \geq .6$</td>
<td>Questionable</td>
</tr>
<tr>
<td>$.6 &gt; \alpha \geq .5$</td>
<td>Poor</td>
</tr>
<tr>
<td>$.5 &gt; \alpha$</td>
<td>Unacceptable</td>
</tr>
</tbody>
</table>
Using the reliability programme (Hull and Nie, 1981), an internal consistency was performed for all the items under 11 dimensions of the questionnaire. Table 3.2 represents the reliability coefficients of all the 11 variables identified for the study.

Table 3.2: Reliability analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Variables</th>
<th>No. of items</th>
<th>Alpha Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Recruitment &amp; Selection (RAS)</td>
<td>13</td>
<td>0.84</td>
</tr>
<tr>
<td>2</td>
<td>Training &amp; Development (TAD)</td>
<td>14</td>
<td>0.89</td>
</tr>
<tr>
<td>3</td>
<td>Compensation &amp; Fringe Benefits (CFB)</td>
<td>8</td>
<td>0.92</td>
</tr>
<tr>
<td>4</td>
<td>Performance Appraisal (PA)</td>
<td>6</td>
<td>0.70</td>
</tr>
<tr>
<td>5</td>
<td>Employee Wellness (EW)</td>
<td>11</td>
<td>0.85</td>
</tr>
<tr>
<td>6</td>
<td>Career Progression &amp; Retention (CPR)</td>
<td>9</td>
<td>0.79</td>
</tr>
<tr>
<td>7</td>
<td>Employee Engagement (EE)</td>
<td>8</td>
<td>0.72</td>
</tr>
<tr>
<td>8</td>
<td>Knowledge Management (KM)</td>
<td>7</td>
<td>0.93</td>
</tr>
<tr>
<td>9</td>
<td>Entertainment at Workplace (EAW)</td>
<td>10</td>
<td>0.82</td>
</tr>
<tr>
<td>10</td>
<td>Job Satisfaction (JS)</td>
<td>11</td>
<td>0.90</td>
</tr>
<tr>
<td>11</td>
<td>Talent Management (TM)</td>
<td>8</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Table 3.2 represents the number of variables, number of items under each variable, and reliability coefficient associated with the 11 dimensions. Each dimension was tested for reliability and found to be in line with the requirements of the research. The initial questionnaire had 106 items. Only one item under Performance Appraisal (PA6) was deleted as it gave a lesser alpha value. Hence the final instrument had 105 items in total. (Appendix A). The research instrument was considered to be reliable as the Cronbach alpha values for the items range between 0.70 and 0.93.

3.15. Primary Data

Primary data was collected through the structured questionnaire. Personal interviews were conducted with the employees and the HR managers’ to elicit their
perception about HR Practices. The questionnaires’ were distributed via email and as well as hard copies.

3.16. Secondary Data

Secondary data was collected through books, journals, and relevant websites like the NASSCOM, Bangalore chamber of commerce and industry and the company websites to get the essential information.

3.17. Data Analysis

Statistical design involves converting series of recorded data into descriptive statements or inferences about relationships. The types of analysis that can be conducted depend on the nature of the sampling process, the measurement instrument and the data collection method (Donald S Tull et al.,)

3.17.1. Descriptive statistics

Data analysis consisted of descriptive statistics such as mean, standard deviation and test of hypotheses such as correlation, analysis of variance (ANOVA). Regression analysis was further conducted to study the impact of HR practices on Job Satisfaction and Talent Management. Structural Equation modeling was also used to validate the results of regression analysis.

Hypothesis I was proved by analyzing the data using Two-way ANOVA. It was used to study the perceptual differences between the sectors. ANOVA is a method of identifying, breaking down and testing for statistically significant variances that come from different sources of variation. There are two sources of variation: between group variation and within group variation. In this study, an analysis of variance was performed to examine the amount of variance among variables, such as age, experience, level, sector and other variables in the questionnaire (Moore, McCabe, Duckworth and Sclove 2003:14.1).
Hypothesis II was tested using ‘t’ test. It is conducted to find out whether the two sets of ratings are “significantly different” from each other or not (Rajendra Nargundkar, 2011). In this research, ‘t’ test was conducted to study the significant difference in the mean opinion with respect to HR practices between the Employees and the HR managers in all the three sectors.

The impact of HR practices on Job Satisfaction and Talent Management was analyzed using multiple regression analysis. The main objective of regression analysis is to explain the variation in one variable called the dependent variable, based on the variation in one or more variables called the independent variables. If there is only dependent and independent variable then it is called simple regression. If multiple independent variables are used to explain the variation in a dependent variable, it is called a multiple regression model.

The general regression model (linear) is of the type

\[ Y = a + b_1x_1 + b_2x_2 + \ldots + b_nx_n, \]

Where \( Y \) is the dependent variable and \( x_1, x_2, \ldots, x_n \) are the independent variable expected to be related to \( Y \) and expected to explain or predict \( Y \). \( b_1, b_2, \ldots, b_n \) coefficients of the respective variables, which will be determined from the input data.

Assuming the model is statistically significant at the desired confidence level, usually 90-95%, the coefficient of determination or the \( R^2 \) of the model is an important part of the output. The \( R^2 \) value is the percentage (or proportion) of the total variance in \( y \) explained by all the independent variables in the regression equation. (Rajendra Nargundkar, 2011).

The Hypothesis III and Hypothesis IV was tested with the help of the conceptual models 1 (Fig 3.1) and 2 (Fig 3.2) respectively.
3.17.2. **Model 1**: This model discusses the impact of HR practices on job satisfaction.

**Fig 3.1: Conceptual Model 1**

Multiple regression equation for Hypothesis III is of the form:

\[ JS = a_0 + b_1(RAS) + b_2(TAD) + b_3(CFB) + b_4(PA) + b_5(CPR) + b_6(EW) + b_7(KM) + b_8(EAW) \]

Equation 1

3.17.3. **Model 2**: This model discusses the impact of HR practices on Talent Management.

**Fig 3.2: Conceptual Model 2**
Multiple regression equation for Hypothesis IV is of the form:

\[ TM = a_0 + b_1 \text{RAS} + b_2 \text{(TAD)} + b_3 \text{(CFB)} + b_4 \text{(PA)} + b_5 \text{(CPR)} + b_6 \text{(EW)} + b_7 \text{(KM)} + b_8 \text{(EAW)} \]

\[ \boxed{\text{Equation II}} \]

3.17.4. Structural Equation Modeling (SEM)

Structural Equation Modeling, shortly called as SEM is a statistical technique used for testing and estimating causal relationship using a combination of statistical data and qualitative causal assumptions. It is also a powerful multivariate technique. It is a confirmatory, rather than exploratory technique, i.e., a researcher is more likely to use Structural Equation Modeling to determine whether a certain model is valid rather than to find a suitable model. Path diagrams play an integral part in SEM. They are like flowcharts, showing the variables interconnected with lines that are used to indicate the causal flow. Causal models can involve manifest variables, latent or both. SEM can also be used as an extension of linear regression analysis. Structural Equation Modeling is verified using AMOS software, Analysis of Moments. In AMOS the model parameters stand out precisely.

The regression models derived in hypothesis III and hypothesis IV are studied for validity under SEM. Exogenous latent variables are synonymous to independent variables. They are the source of fluctuation in the values of other latent variables in the model. Endogenous latent variables are synonymous with dependent variable and as such influenced by the exogenous variables in the model either directly or indirectly. The exogenous and endogenous are indicated along with regression equations 1 and 2.

3.18. Limitations

- The nature of measure used in this research is based on the perceptions of the participating employees. Hence respondent errors might occur.
- Non response error is obvious.
- The responses are drawn from few select companies. It may vary with other companies.
- The HR practices may change over a period of time. The study is limited to a specific time period.
- It is limited to the companies/institutions in the Bangalore city, India.

3.19. Chapter Scheme

CHAPTER 1: INTRODUCTION
CHAPTER 2: REVIEW OF LITERATURE
CHAPTER 3: RESEARCH DESIGN
CHAPTER 4: DATA ANALYSIS AND INTERPRETATION
CHAPTER 5: SUMMARY OF FINDINGS, CONCLUSIONS AND SUGGESTIONS

BIBLIOGRAPHY
APPENDIX

Chapter 3 dealt with the research design highlighting the objectives, scope, hypotheses statements, sample, research instrument, plan of analysis and the limitations of the study. The chapter discussed different statistical tests employed to prove each hypothesis statement.