CHAPTER -2

RESEARCH METHODOLOGY

In any research study, the principle prerogative of the researcher is to delineate a course of action of unravelling the social realities pertaining to the subject to be studied. That course of action should be robustly rigorous to stand to the qualifications of the scientific method and its characteristics such as objectivity of the tools of inquiry, their amenability of capturing data, both qualitative and quantitative, with utmost reliability and adjunct validity, verifiability and unleashing the possibilities of replications elsewhere. The whole process from collection of evidence to the point of presentation of the observations, drawing conclusions and chartering suggestions and implication to the discipline should be logically constructed into an organic whole.

This chapter on ‘Research Methodology’ principally stands for that scientific course of research action, demarcating the details of the need and significance of the study, statement of the problem, objectives of the research study, research hypotheses, research design adopted, sample frame, the tools of data collection, methods of analysis and interpretation culminating with specifying the limitations of the study. It throws light on the circumstances under which the specific tools were used and the manner in which data was collected, analysed, interpreted and conclusions drawn.

Need and Significance of the Study

In the current dynamic and volatile environment organizations are undergoing many changes for their survival, growth and development. The external environmental factors which influence the organization are never static. Organizations should understand these changes and adopt certain farsighted strategies from time to time to have sustainable development and progress.

In the process of gaining competitive advantage and sustainable development in the global markets, it is the sole responsibility of organizations to have a self introspection of their internal working environment, systems, processes, and people’s
capabilities. Unless organizations reassess and adopt proactive strategies, it is difficult for them to promote organizational effectiveness and the organizational development.

In this context, we cannot over emphasise the contribution of HRD, its subsystems and the HRD-climate which has greater impact on organizational effectiveness and also on organizational development.

Oil and gas play a dominant role in our day to-day life. Since consumption of oil is increasing day by day the government is finding it difficult to generate oil and gas in the country. The success of OIL and GAS industry in accreting and producing hydrocarbons in coming years is a major challenge for the country's economy. It can be said that Oil and Gas is the back bone of the country's economic development. Achieving higher levels of demand for oil as well as increasing the production is the matter of strategy. These require effective development of Human resources. The present environment is complex, with full of uncertainty and operational management has got a limited role to play. With the entry of private entrepreneurs and in a cut-throat competitive environment only the development of human resources will help an organization to deal effectively with the given situation.

In a longer perspective HPCL has to move towards not only establishing international standards but also furthering such objectives by using sophisticated technology. The key to this lies in the human resources. In the uncertain future the existing employees in the organization should prepare themselves for the change that comes in front of them in future. This is possible through keeping in view of all internal and external requirements and by increasing knowledge, skills and capabilities of the entire workforce people in the organization in general and the managerial personnel in particular. A firm can optimize its resources only with timely updation of human resources. Its faster growth depends on organizational performance. Therefore a constant review should be made with reference to human resources planning, selection, training, and development and information techniques. Further HRD mechanisms and strategies need to be assessed to understand their effectiveness. No intensive study on HRD
practices with empirical basis has been attempted in the past. In this context, the present study gains currency and significance.

**Statement of the Problem**

Human resources development would be useful when it faces the challenges in the external environment. It must be quite responsive and eminently proactive to the external as well as internal environment. HPCL’s success depends not only through upgradation of its operational activities but also the company can grow and develop when it uses its internal strengths to tap the external market potential or else they fail as the internal strengths will become weak or redundant.

Though HPCL- Visakh Refinery implements sophisticated HR practices, still there are certain implications in implementing HRD sub-systems and in the existing HRD-climate. This study intends to find out various dimensions of HRD-climate and HRD- subsystems which either tends to hinder or contribute for the effectiveness of the organization.

An assessment of the HRD practices helps the organization to align these with the corporate objectives. The study also seeks to identify the limitations in the operation of the HRD-Sub systems and development of human resources. Further it seeks to analyse to what extent human potential and capabilities are maximised through its training programs and whether the OCTAPACE culture is emerged in this regard.

**Scope of the Study**

The scope of the present study is limited to HPCL Visakh- Refinery. The study is based on case study method and delves into the details of HRD practices in the organization. Further, HRD- climate, working of the HRD sub systems such as training and development programs and Performance Appraisal Systems also come under the scope of the study. The study helps us to understand the gaps in HRD practices by examining the endemic weaknesses and also identify the strengths to put them for further consolidation to move in the direction of organizational vision and mission by developing human resources and organizational effectiveness in HPCL Visakha Refinery.
Objectives of the Study

The present study aims at examining the Human Resources Development Climate as well as the Organizational Effectiveness that, laces into its development in Hindustan Petroleum Corporation Limited, (HPCL)- Visakh Refinery.

The following are the specific objectives set for the study:

- To study the nature and quality of OCTAPACE Dimensions prevailing in HPCL- Visakh Refinery.
- To study the nature and quality of General Climate of HPCL- Visakh Refinery.
- To study the nature and quality of HRD Mechanisms in HPCL- Visakh Refinery.
- To study HRD Climate and Organizational Effectiveness of HPCL- Visakh Refinery.

The other objectives incidental to the specific or principal objectives are:

- To examine the Organizational Structure and Culture of HPCL Ltd, and their contribution to HRD practices.
- To study the Profile of the Organization and the Support Systems of Human Resource Development.
- To assess effectiveness of the Training and Development programs covering both managerial and non managerial employees.
- To assess the nature and state of OCTAPACE culture perceived by managerial and supervisory levels in HPCL Ltd, Visakhapatnam.
- To know the impact of HRD on Organizational Effectiveness.
- To study the impact of HRD practices in achieving the Organizational goals/ development and there by,
- To offer appropriate suggestions, inconsonance with their weaknesses and strengths, to improve the HRD Systems and Organizational Effectiveness of HPCL- Visakh Refinery.
Hypothesis

A logical corollary of objective of the study should be setting up of hypotheses that can bring to fore the relationships between the different dependent and independent and intervening variables that can be put for validation.

Even though the study offers brilliant scope for setting up of hypotheses and their validation, with all the scientific rigour that is warranted thereupon, for two practical reasons the idea of setting pertinent hypotheses and their empirical validation could not have been possible which are elaborated further in the context of limitations of the study.

Research Design Adopted

It has been the experience and considered viewpoint that corporate governance in India has been much shrouded and less transparent to researchers external to the organizations. Most often researcher find more non-cooperation and less encouragement to purse the studies, even though the studies would bring significant gains to them in altering their courses and aligning new strategies. Organizations, when in trouble or looking for reengineering are more prone to refer consultants while they are less inclined to academic researchers to open their systems to be studied by academicians. May be the organizations cannot be blamed for lacking appreciation of and encouraging academicians studying their systems. Not every organization is like this. Nor every academic researcher was viewed in that negative way. But the experience of the present researcher in the present organization was such that the system accorded a limited access.

This reality had a profound bearing on the kind of design adopted and the tools of inquiry that were employed. The researcher originally opined to adopt a case study design with the intension of having an in depth study of the organization in its entirety. Also the intention was to apply a host of tools of data collection in consonance with the case study design. But the limited access granted to the researcher offered a further limited scope to go by the full potential of case study method, but however the researcher could meet the bare modicum of its requirement thus making the study a combination of case study leading to the exploration of the HRD Climate and Organizational Effectiveness.
Sample

The universe for the present study was a large public sector undertaking located in Visakhapatnam namely Hindustan Petroleum Corporation Limited (HPCL). The undertaking chosen as the universe was an oil industry, and its total workforce was 1232 employees as on 01.11.2011. There were different cadres in the organization. For the purpose of the study these cadres have been broadly classified into three categories namely executives (managerial), staff (non-managerial), and workers (Un-Skilled and Semi-Skilled). Selection of the sample covering different categories of employees was made by following simple random sample method, using systematic numbers, picking up every fifth member from the different categories of workforce, to a tune of 20%, however approximating to a whole number of 250 in all including the respondents of the pilot study. A uniform 20% across all categories is intended to know the internal variations across the category of employment. The total manpower of the organization category wise was as follows: Executie-580; Staff- 202 and Workers-450. Because of non-response of some selected respondents or non-availability of immediate alternative respondent based on systematic numbers, the final sample consists of 111 from executive cadre, 47 from staff cadre, and 92 from workers categories respectively. This comes to 44%, 19% and 37% of executive, staff and workers categories respectively.

Tools of Data Collection

Different methods were adopted for collection of relevant and pertinent information both from primary and secondary sources. Official records include files, documents, brochures, published and unpublished material constitutes the secondary source. The responses experiences and feelings of the respondents gained through the questionnaire constitute the primary source. The researcher also gained some information on the basis of informal talks with a cross section of some employees. The keen observation of various aspects having a bearing on the study also helped in getting insights into the phenomenon. Thus data from secondary sources and primary sources such as the questionnaire informal talks with key informants and observation constitutes
the tools for understanding the nature and quality of HRD- Sub systems and HRD culture in the given organization.

On completion of the review of literature, the researcher designed a questionnaire which consists of fifty questions. T.V. Rao’s standardized questionnaire was adopted as the basis. The same was elaborated with a combination of few parameters of organizational effectiveness such as team work, superior –subordinate relationship, organizational change, and problem solving approach. This constitutes primary tool of data collection from the primary sources of study. The questionnaire consists of 50 items with five broad divisions and each division indicating a significant facet with a combination of elements.

Some of the questions may seemingly look as similar or repeating, but the content, context and perspective is with reference to the particular aspect being studied such as HRD Climate, General Climate, HRD Mechanisms, Organisational Mission, Organizational Development, etc. They would also incidentally serve the purpose of cross verification of the responses. However the questions were from time tested tools of contemporary researchers that had been used frequently by others too.

Every item is provided with five alternative responses on the pattern of the Likert’s five point scale. A pilot study was conducted by administering the questionnaire to a small sample of 25 respondents cutting across all the three categories. The researcher had made use of the test-retest method in order to establish the reliability of the questionnaire. The interval between the test –retest method was two months. After the pilot test, the same questionnaire was translated into the regional language Telugu, in order to facilitate the non- managerial staff and workers to answer on their own. To translate the English version of the questionnaire into Telugu two faculty members who are proficient in both the languages were banked upon. When certain clarifications were needed in the field, the same were provided by the researcher.
Procedure

The researcher after getting the necessary permission from the concerned authorities had approached the HR department of the organization. Then the investigator has studied the following records thoroughly, (i) Annual Reports of the Organization, (ii) Registers relating to recruitment, promotions, inter departmental transfers, training and development programmes, performance appraisals (iii) Production particulars, turnover, wage settlements and (iv) Machinery and equipment, budgetary details v) HR- manual and so on. On scrutinizing the records, the researcher has prepared the notes separately relating to each of the variables under study.

During the second stage, the researcher consulted the Senior manager- training and development and on his advice and with the assistance of a non –managerial staff of the same department, personally investigated the physical, technical and other relevant aspects of the selected organization. The personal investigation includes buildings and office complexes, important equipment, work spots and the welfare facilities, training and development facilities, and recreational amenities. As part of the physical investigation by the researcher, oral interviews with the respondents were conducted in a casual manner on several issues ranging from specific to general aspects of the training and development, HRD climate etc. A separate note on the content of the oral interviews was prepared by the researcher for each of the element in a concurrent manner.

During the third phase, the researcher had administered the questionnaire to the respondents based on the prior appointments fixed for the purpose. The researcher was present at the time when the respondents answered the questionnaire and had taken care that the respondents answer on their own and do not consult any one. The respondents were told about the purpose of the study and they were given reasonable time to recording their responses. On completion of the questionnaire the respondents were asked whether he/she likes to add anything to what he/she has answered. The oral statements and elaborations also had been recorded on the questionnaire with a view to consider them for the purpose of analysis. Thus the study fulfilled the major requirements of a case study design.
Scoring and Measurement of Variables

The different items that are present in the questionnaire indicate different scale factors, i.e., elements. The different elements were provided with the same alternatives on Likert pattern of 5 point scale. The five response categories together with the numerical values assigned to them for computation were: Almost always true (5), Mostly true (4), Sometimes true (3), Rarely true (2), Not at all true (1).

The values on each of the element together with the values of the items measuring each dimension for each respondent were added and the same was taken as the raw score of that particular respondent.

Data Interpretation

An attempt had been made to analyse and understand the perceptions of the sample respondents about the HRD climate and Organizational effectiveness that is prevalent in Hindustan Petroleum Corporation Limited (HPCL), Visakhapatnam.

As mentioned earlier the questionnaire contains five point scale and for each statement the respondents were asked to assign rating on the five point scale as felt by them at the time of answering. The rating pattern was as follows.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Choice of Response</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not at all true</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Rarely true</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Sometimes true</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Mostly true</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Almost Always true</td>
<td>5</td>
</tr>
</tbody>
</table>

Calculation of scores
The purpose of the study is basically to study the nature and quality of human resource development practices and organizational effectiveness in Hindustan Petroleum Corporation Limited, Visakhapatnam. The focus was not impact assessment of the former on the latter but only to study both the elements in terms of their nature and quality depicting their relative strengths and weaknesses, so that pragmatic suggestions and pertinent recommendations can be made with an undercurrent of social work implications for practice and further research.

The rationale adopted for drawing statistical inferences was that in a five point scale on the continuum of ‘Not At All True to All Most Always True’, the mid-category ‘Some Times True’ may be construed as the neutral point. While the first two carry a negative valency, the last two carry a positive connotation. By applying the logic of triads, the spread on positive or negative sides is divided into three categories such as ‘Mild’, ‘Moderate’ or ‘Strong’ where the sum of percentages fall in the range of 0-33; 34-66; 67-100 respectively, either on positive or negative side. However, only the predominant of positive or negative occurrences only had been brought to analysis.

More over a second stage categorization had also been rationally adopted by setting some limits on the aggregate positive and aggregate negative scores on the various elements of the different dimensions in order to infer more incisive conclusions, apart from summarising the major findings.

On the aggregate negative side, where ever the score is between 6-11 percent, i.e., the higher side of the first triad in a distribution of 33 percentile points, the conclusion would be that the element needs ‘attention’. If the score is between 12-22 percentile points, the conclusion would be that the element needs ‘immediate attention’. If the aggregate of the negative is between 23-33 percentile points, the conclusion would be that the element needs ‘most immediate attention’. This aspect particularly points out at the weaknesses of the organization on the element under scrutiny.

Regarding aggregate positive score, the principle of triads had been taken, however from the second rung of the moderate class. As already described, on the principle of triads, the score is classified as ‘mild’, ‘moderate’ and ‘strong’. As the
occurrence of ‘mild’ and ‘strong’ were relatively fewer, it is believed that by introspecting the diversity of the most frequent category, that is ‘moderate’, the relative strength of the given element can be fixed more vividly. Hence any element scoring in the range of 45-55 percentile points would be concluded as in ‘appreciable’ category, element with score in the range of 56-66 percentile points as ‘commendable’ and beyond 67 percentile points, which comes under the ‘strong’ category, as ‘highly commendable’. However the whole classification is to draw inferences and conclusions regarding relative weaknesses and strengths so that the needed reengineering can be planned for. And that reengineering forms the core of suggestions and recommendations emanating from this research study.

And at a third and final level, in order to arrive at the ultimate reality in a nutshell, the rationale adopted was weighing of the strengths and weakness, which was arrived by a simple arithmetic of assigning 3 weightage points to ‘highly commended’ as well as ‘most immediate attention’, 2 points to ‘commended and ‘immediate attention’ and 1 point to ‘appreciated’ and ‘attention’ categories on positive and negative sides. This construct would give the net outcome of the strengths over weaknesses or vice-versa.

The study is also had some secondary data collected from the official source from HPCL, Visakhapatnam. Data was collected from the offices of Man power planning, HRD, Personnel, Human resource information systems, and the training and development departments, etc of HPCL, Visakhapatnam. The researcher had also incorporated the views of managerial, non-managerial staff and workers of various departments and divisions of HPCL, Visakhapatnam in a concurrent manner running parallel with the explanation of the different elements of the various dimensions.

The data was processed by applying SPSS Version 11, relatively very old one, but however was available to the researcher with great difficulty. The different diagrams and cross tabulations could have been possible with the extensive use of SPSS in a restricted manner, not exploiting its full potential due to the reasons as mentioned hereunder vide limitations of the study.

**Limitations of the Study**
The limitations of the study may briefly be stated as follows.

1. The biggest limitation was operational constraints experienced in putting SPSS to its full potential. There had been brilliant scope for setting up of hypotheses that could flow from the statement of objectives and their empirical validations. Unfortunately that could not have been possible as the researcher adopted a three dimensional analysis of variables such as the given element against length of service and category of employment. As there were zero values into the tables of correlation, and the researchers frantic efforts to resolve the same by getting expert guidance ultimately zeroed down to abandon the chi-square method as well as setting and testing of hypotheses. However the needed rigorousness to analysis and interpretation had been attempted by making use of the science of triads and also by simply not attempting to distributional statistics- just explaining percentage distributions of the classes of a given table.

2. In terms of diagrammatic and graphic representation also, a kind of conservative approach had been adopted by keeping all data relating to elements into pie diagrams, since they give immediate inferences in percentage points too. Also data of all composite tables are put to 2/3 dimensional bars, cones or pyramids to portray the relative strengths or weaknesses.

3. It was found that the respondents were rather hesitant and ambivalent in providing the desired information and sometimes officials were not interested to discuss certain aspects.

4. The conclusions that are drawn need not necessarily apply to all the public sector undertakings in India, since it is a case study analysis of Hindustan Petroleum Corporation Limited, Visakhapatnam.

5. Systematic analysis was not there on the part of the researcher, with regard to the data that was published, to help in understanding various aspects of the study. The researcher had to make indefatigable efforts to collect relevant information.

6. The researcher found that, the employees had a very vigorous work schedule, due to which they were unable to spare adequate time for the purpose. During such, situations the researcher had to request them to allot time after the shift timings.
7. Establishing rapport with the respondents posed a problem in the initial stages. The researcher took the help of the personnel of HR department, welfare officers in establishing her identity and explaining the nature and purpose of the study.

8. The generalizations of the study cannot have universal application. These must be applied with caution, when we try to apply to the organization of similar nature.

However, the above mentioned limitations do not detract from the quality output of the present study as substantive inferences had been made with quite rational approach and logical conclusions.