CHAPTER - IV

RESEARCH METHODOLOGY
Problem Statement

In spite of the importance and prevalence of the use of new technology in work organizations, few empirical studies exist about how new technology impacts work and worker due to use of new technology. In 1966, Hill reported that few empirical studies have identified or described the effects of computerized information system use. Twenty-two years later, Parsons (1988) reported that empirical research on job changes due to computerization is surprisingly sparse. Thus, research to date seems mixed in its understanding of the effects of technology on work and workers. Most researchers agree that the research is not convincing, in that it lacks clear conceptualization and rigorous experimental research designs, and consequently, has left many basic questions unanswered (Attewell & Rule, 1984; Beard, 1991). Therefore, the question remains: what is the impact of technology on work and workers? The purpose of this study is to find out how the implementation of new technology and/or changes in existing ones to replace an old one affected jobs and the workers and how it is being managed in technology intensive organizations.

Objectives of the Study

Based on the research gaps identified and problem statement the objectives of the study are as follows:
1) To study the nature of change and period when redundancy program was carried out.

2) To study whether insourcing has taken place leading to job increase.

3) To study work redundancy due to technological change.

4) To study worker redundancy due to technological change.

5) To compare work redundancy among different units of the organizations taken up for the study.

6) To compare worker redundancy among different units of the organizations taken up for the study.

7) To study the rate of work redundancy for different types of jobs.

8) To study the rate of worker redundancy for different workers having various skill levels.

9) To study the adjustment mechanisms employed by organizations to deal with redundancy.

10) To study the implications of technological change on future employment.

11) To study resistance by employees towards technological change.

12) To study the psychological impact of redundancy on workers.
13) To study the difference between the mean scores of manufacturing sector and service sector on the nature of change and period when redundancy program was carried out.

14) To study the difference between the mean scores of manufacturing sector and service sector on whether insourcing has taken place leading to job increase.

15) To study the difference between the mean scores of manufacturing sector and service sector on work redundancy due to technological change.

16) To study the difference between the mean scores of manufacturing sector and service sector on worker redundancy due to technological change.

17) To study the difference between the mean scores of manufacturing sector and service sector on work redundancy among different units of the organizations.

18) To study the difference between the mean scores of manufacturing sector and service sector on worker redundancy among different units of the organizations.
19) To study the difference between the mean scores of manufacturing sector and service sector on the rate of work redundancy for different types of jobs.

20) To study the difference between the mean scores of manufacturing sector and service sector on the rate of worker redundancy for different workers having various skill levels.

21) To study the difference between the mean scores of manufacturing sector and service sector on the adjustment mechanisms employed by organizations to deal with redundancy.

22) To study the difference between the mean scores of manufacturing sector and service sector on the implications of technological change on future employment.

23) To study the difference between the mean scores of manufacturing sector and service sector on resistance by employees towards technological change.

24) To study the difference between the mean scores of manufacturing sector and service sector on the psychological impact of redundancy on workers.
Nature of the Study

In the present study the major emphasis is on the discovery of ideas and insights. The purpose is that of formulating a problem for more precise investigation and hence, the study is Exploratory in nature.

Scope of the Study

To have a clear focus and to limit the boundaries, it is necessary to determine the scope of the study.

1. The study is of work and worker redundancy and its management in technology intensive industries in India.

2. Both public and private sector organizations have been taken for the purpose of the study.

Population

The population for the present study comprises of all organizations in India which are technology intensive.

Methodology

The methodology of the present study has been worked out in accordance with the objectives set in chapter 1 and also stated in this chapter. The concept of methodology includes four aspects; namely, Sample, Tools used, Procedure and Data analysis.
Sample

The sample comprises of thirty-six organizations in technology intensive industries. The data were collected from the Human Resource managers of each organization. These thirty-six organizations were from different industries, namely, Banking, Information Technology (IT), Automobiles, Power, Chemical, Machine Tools, Tea, Cement, Steel, Logistics, Consultancy, and Health care.

Industry wise distribution of sample is given below:

<table>
<thead>
<tr>
<th>Industry</th>
<th>N=36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine tools</td>
<td>6</td>
</tr>
<tr>
<td>Power</td>
<td>5</td>
</tr>
<tr>
<td>Cement</td>
<td>4</td>
</tr>
<tr>
<td>Chemical</td>
<td>4</td>
</tr>
<tr>
<td>Banking</td>
<td>4</td>
</tr>
<tr>
<td>IT</td>
<td>3</td>
</tr>
<tr>
<td>Automobiles</td>
<td>2</td>
</tr>
<tr>
<td>Tea</td>
<td>2</td>
</tr>
<tr>
<td>Steel</td>
<td>2</td>
</tr>
<tr>
<td>Logistics</td>
<td>2</td>
</tr>
</tbody>
</table>
Consultancy 1
Health care 1

Sector wise distribution of sample is given below:

\[ N = 36 \]

- Manufacturing (\( N = 20 \))
  - Automobiles (2)
  - Chemical (4)
  - Machine tools (6)
  - Tea (2)
  - Cement (4)
  - Steel (2)

- Service (\( N = 16 \))
  - Power (5)
  - IT (3)
  - Logistics (2)
  - Banking (4)
  - Consultancy (1)
  - Health care (1)

Purposive or non-probability sampling technique was used to select the sample.
A scale for measuring work and worker redundancy and its management in technology intensive industries was developed by the investigator as there is no scale available to study work and worker redundancy. In order to develop this scale, the investigator prepared a large number of items and these items were based on the issues related to the topic under study. To ensure the relevance of the items, the investigator determined the content validity of the items by obtaining judges rating. For this purpose, five judges were recruited. They were the ones who are well versed in the field of Human Resource Management. Initially the investigator floated eighty-five items and out of these the investigator finally selected only sixty-seven items. The investigator selected only those items where there was 100 percent agreement among the judges.

Thus the final version of the work and worker redundancy scale comprises sixty-seven items with a 5-point rating scale. Items are stated in different ways depending on the information sought by that particular item. There are forty-one (41) items ranging from ‘strongly agree’ to ‘strongly disagree’ on a five point rating scale giving 1 point to ‘strongly disagree’ and 5 point to ‘strongly agree’; twenty-two (22) items, where numbers have been asked ranging from ‘less than 100’ to ‘more than 400’ on a five point scale giving 1 point to ‘less than 100’ and 5 point to ‘more than 400’; two (02) items
where percentage has been asked ranging from ‘100 percent’ to ‘not at all’ on five point rating scale assigning 5 point to ‘100 percent’ and 1 point to ‘not at all’; one (01) item to know the year starting from 2004 to before 2001 assigning 5 point to before 2001 and 1 point to 2004; and one (01) item related to the number of training programs held ranging from ‘less than 5’ to ‘more than 20’ per year assigning 1 point to ‘less than 5’ and 5 point to ‘more than 20’. The score ranges from 67 to 335.

Procedure

First, the researcher identified four technology intensive industries namely, Banking, IT, Automobiles, and Chemical for the purpose of data collection. Kothari’s Industrial Directory of India was treated as the sampling frame for the purpose of selecting organizations from each of the four industries mentioned above. Fifteen organizations from each of the four industries were selected. The total number of organizations that were selected then came to sixty. The criterion that was used in selecting the sample organizations was that these organizations should have been in existence for more than ten years. Organizations from both public and private sector were selected. The research tool was then mailed to the Human Resource heads of the organizations selected for the purpose of the study. The researcher waited for their responses for more than a month. On getting no response from their side, reminders were sent to them through mail. When
there was no response again from the side of those who were being approached, the researcher thought of using personal contacts for collecting data. A list of personal contacts of persons working in technology intensive organizations was prepared. Then the researcher contacted each person over phone and sought his or her cooperation for the purpose of data collection. The purpose of the study was explained to them and they were assured that the names of their organization would not be disclosed anywhere and the information provided by them would be used for research purpose only. The researcher also sought their cooperation for recommending the names of people working in technology intensive organizations. In this way the researcher was able to establish contacts with many people. There was mixed response from the side of people who were contacted. The researcher went personally to collect data from those who gave positive response. The researcher helped those respondents who faced difficulty in understanding some of the items in the research tool. The data collection involved a period of about ten months.

**Tools and Basis of Analysis**

Even though the investigator tried to collect and analyse data on industry wise basis, difficulty in data collection made it impossible to analyse data on industry wise basis. As is evident from the distribution of sample that in some cases there is only one organization in one industry. Hence data has
been analyzed by taking all the organizations together. Further, the organizations have been grouped on the basis of sectors into manufacturing and service sectors for the purpose of analysis.

Since the data was factual in nature, only frequency of responses could be calculated for each item where all the organizations have been taken together. However, where organizations have been divided into manufacturing and service sectors, t-test was used to study the significance of difference between the mean scores of both sectors.

**Limitations of the study**

The following are the limitations of the study.

1. In the present study data were collected from the human resource heads of the organizations taken up for the study. Had data been collected from the employees, the psychological impact of change could have been studied in a better way.

2. A small sample size has limited the scope of the study.

3. There is a possibility of response bias and hence redundancy could have been underestimated.

4. Investigator’s limited knowledge could also have acted as a constraint in the proper execution of the study.
The purpose of the present study was to examine work and worker redundancy and its management in technology intensive industries. In this context several research objectives were formulated, which have already been mentioned in chapter 1. Following are the results and discussion on these objectives.

Initial attempts to measure work and worker redundancy and its management in technology intensive industries were performed by calculating the frequency of responses. This has made way towards more sophisticated method of analysis. t-test was then used to determine the significance of difference between the mean scores of manufacturing sector and service sector.

The tables in the following pages show the frequency of response on each question of the developed questionnaire.