Chapter 6

RESEARCH METHODOLOGY.

‘Research is about advancing the state of art. 
It is about treading the untrodden path. 
It is about opening the new vista.’

-- Shri Narayan Murthy
Founder Chairman, Infosys. 22

6.0 Introduction

This chapter gives all the details relating to research methodology. It explains the relevance of the study important concepts, objectives, hypothesis, sources of data and methods chosen for collecting the data. Scaling techniques used for analysis is also explained in brief.

6.1 Selection of topic of research

When the researcher decided to undertake the research on training programs in industries, everybody including friends and family members started criticizing with a piece of advice to prefer easy subject, so that in a period of two to three years, the thesis could be completed. Another common enquiry was regarding what type of material gain is expected by the researcher after completion of the project in his post retirement life. Despite such type of unwanted and expected criticisms, the researcher was firm from the beginning to stick to the topic of training, only because he had varied experiences for past several years in training field, while

conducting programs in various industries, in different parts of our nation, while in service or even in post retirement life.

The topic of training for industrial employees specifically in the case of developing countries in South East Asia has got unprecedented importance on the background of stiff global competition in every sphere of life all over the world. It was necessary for Indian industries to stress upon organizing training programs of short duration from the level of managers to workers continuously, with ultimate objective to enhance the efficiency of employees.

6.2 Relevance of the topic
The topic of the research is “The impact of training interventions on the development of competencies of the employees in selected private sector unit in Pune.”

The importance of this topic and its relevance in the current competitive age is beyond doubt. Its importance was realized by everyone at management level and also at union level from 1980 onwards due to changing economic scenario all over the world. In the case of our nation, before independence, some sporadic efforts were made at Jamshedpur in Bihar by Tata Management, but that was related with technical training. But if we peep in the history of Indian trade union movement, it is noticed that at Ahmadabad, the office bearers of Indian National Trade Union Congress used to organize training programs for their office bearers as well as even for their members sometimes at the end of shifts or on weekly holidays. The then union
leader late Shri Gulzarilal Nanda, a devoted staunch national trade union leader and profound believer of Gandhian philosophy, organized training programs under the active leadership of Mahatma Gandhi. Gandhiji in his several prathana lectures mentioned the importance of training for everyone. Late Shri Shripad Amrut Dange another national trade union leader of All Indian Trade Union Congress advocated the importance of training and also had taken lead to organize such programs, whenever the time demanded.

After independence, many management associations, government departments at central and state level, national unions in Railway, Defence establishments, major employers in various fields realized the importance of training and organized programs according to their requirement. In this connection credit goes to international Labour Organization, a tripartite body set up in Geneva. In its annual conferences ILO passed the resolutions to conduct the training programs for workers to make them aware of their duties along with their rights. Till date, ILO continued to pursue member nations, managements and unions to organize training programs after identifying training needs of employees and also provides partial financial support.

The growing importance of training in every field can not be neglected now by any one in the present competitive age. It is also now a well accepted fact that workers who are having sufficient work experience are able to suggest new ideas, if chances are offered to them through various activities like
suggestion schemes and quality circles. In such changed circumstances, the significance of training in manufacturing and service field is now beyond doubt. Hence more stress on innovation and research for effective as well as result oriented implementation of training programs is the need of the day. Many senior managers at corporate level are aware of this reality and organize training programs regularly. But according to researcher’s experience, in many organisations, the organization of training programs seems to have become a ritual. They are conducted, because it is mentioned in the training calendar, more over, it is a part of duty. Of course there are some exceptions. But now time demands that such statements should be verified with the application of scientific research methods. Hence the researcher came to the decision to undertake training for a detailed study.

6.3 Important concepts and definitions
In this project the following concepts have been used. The same are clarified below. :-

1. Training
Oxford dictionary defined training as “the process of teaching or learning a skill or discipline”\textsuperscript{23}. In the competitive era, the training of employees has become unavoidable and essential need for every unit for its survival and growth. Moreover it is a continuous process with intervals for every

one from managers to operators to update the knowledge and upgrade the required skills of employees.

At present in India, in all major industrial units training programs are conducted regularly. National Productivity Council and Workers Education Scheme have done a marvelous job by creating awareness of the importance of training among employees for enhancing the quality and productivity in service as well as in manufacturing units.

For the purpose of this study training is defined as systematic process of developing required competencies among the employees.

2. Learning
The words ‘training’ and ‘learning’ are very closely related. The dictionary meaning of ‘training’ is already mentioned above. The dictionary meaning of word ‘learning’ is to acquire knowledge or skills through study. In the learning process the willingness to continue self study is presumed. In Cummins India the training centre selected for survey in this project is called learning center.

3. Personnel Management/ HR Management
These are the functional areas of management. These are related with employees in an organisation. The term personnel management is a new avatar of labour management in a factory. The duty of a personnel manager is to monitor the labour force. While in HR function the
importance is given to personnel as a resource and efforts are made for developing and maintaining their efficiency.

The researcher was involved in last fifty years in imparting training from rank and file to managers. The new trend at corporate level since last thirty years is to identify employee deficiencies and give more stress on training for improvement in their performance than issuing memos and charge sheets to the workers. This is the major job of HR management.

4. Employee/ worker / operator
Employee is a very broad term. All managers /supervisors etc. can be categorized under the term employee. While the category of worker or operator is entirely different. He is expected to do manual or mechanical jobs. He can be appointed on purely temporary basis / contractual basis / regular appointment depending on the local circumstances. For the purpose of this study employees at operator level are covered.

5. Competencies/ skills
There is a very thin difference between these two concepts. The word skills has a little broad meaning. The dictionary meaning of the word skill is practiced ability to do any type of work. While the dictionary meaning of the word ‘competency’ is the ability or capacity to do any job. It is related with performance on the background of competencies.24 The researcher has used these words skills and competency with

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relation to performance. In the present global competition the word competence or competency is often used to mention the capacity to do the job to achieve success. It may be inborn or acquired.


The dictionary meaning of the word ‘evaluation’ is to assess the value of any assignment or job. In this project, it is presumed that the evaluation of training programs was done objectively to know the qualitative improvement in the performance of the trained participants. In training process, the evaluation stage has got a specific importance. For making training programs more effective and practical, there is a basic need to follow the evaluation process very scrupulously. It is said that evaluation sheet filed by a participant is a main gate to know the mind set of the participants and the extent to which the training program is successful.

6.4 Objectives of research

The principal purpose of this project is to find out the utility of the training programs for the qualitative improvement in the performance of employees. The objectives with which the research project is carried out are as follows:-

1. To study the expectation of employees from training programs

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2 To know the opinions of trainees regarding conduct of the training programs.
3 To study the opinions of trainees regarding various method of training.
4 To find out how far training leads to development of the competencies of the employees.

6.5 The Hypotheses
When a researcher observes facts and takes up a problem for analysis, the point of start with is hypothesis. The concept of hypothesis is defined by Goode & Hatt as “A proposition which can be put to test to determine validity.” Hypothesis thus is a statement which the researcher has to test. It may be verified or rejected on the basis of data collected during the project. In the present project the hypotheses are:
1 Employees believe that training leads to development of competencies.
2 Employees feel satisfied about conduct of the training programs.
3 Employees regard case studies as an effective method of training.
4 The evaluation by the superiors denotes that training has led to improvement in performance of the employees.

6.6 Type of Research
There are various types of research. Few of them and the type chosen for this research project are as follows.

1. **Descriptive vs. Analytical research**: Descriptive research includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. The major characteristic of this method is that the researcher has no control over the variables. He can only report what has happened or what is happening. The methods of research utilized in descriptive research are survey methods of all kinds, including comparative and correlational methods. In analytical research, on the other hand, the researcher has to use facts of information already available, and analyze these to make a critical evaluation of the material. The present research is descriptive in nature.

2. **Applied vs. Fundamental**: Research can either be applied / action oriented or fundamental/theoretical. Applied research aims at finding a solution for an immediate problem faced by an organization, whereas fundamental research is mainly concerned with generalizations and with formulation of a theory. Research studies concerning human behaviour are examples of fundamental research, but research aimed at certain conclusions on any business problem is an example of applied research. The research project
undertaken by the researcher is an applied research.

3. **Quantitative vs. Qualitative** :- Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in quantitative terms. On the other hand, qualitative research is concerned with qualitative phenomenon. For example, motivation research, improving productivity, attitude survey of school going children in the specific age group etc. The present survey regarding the impact of training programs on individual behavior is a qualitative survey. The research data is collected through a questionnaire. It is tabulated and analysed. While recording & interpreting the data, the researcher has used his own observations and inferences drawn from discussions with trainers and trainees. Hence it is the qualitative research.

4. **Conceptual vs. Empirical** :- Conceptual research is related with some abstract ideas. It is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones. On the other hand, empirical research relies on experience or observation. It is data- based research, coming up with conclusions which are capable of being verified by observation or experiment. The present research studies the opinions of trainees on the
training programs that have been conducted by companies. Hence it is an empirical research.

Research may be done in various ways. But one truth is universal. That is, increasing application of research in every field helps make progress possible.

6.7 Scope of Research
The study is restricted to selected four organisations in Pune city, namely, Tata Motors Ltd., Bharat Forge Ltd., Thermax Ltd. and Cummins India Ltd. The organisations are located in four different parts of Pune. In all these organisations training is a regular ongoing activity covering employees and managers across the organisations. Covering all types of training was not possible and was also likely to generate data of varied nature. Keeping the objectives in mind the researcher decided to select a specific category of employees, namely workers and operators. Efforts were made to concentrate on training imparted in the initial period of employment, however some training programs designed specifically for workers were also included under the study. Data was collected on training programs covering certain common topics namely:
Communication skill, Health and safety, Tools of quality management, Interpersonal relations, Seven habits, Process improvement, Team building

Data was collected on expectations of employees regarding training, opinions about the actual conduct of training, utility
of training as experienced by them and also their supervisors in view of the training programs mentioned above.

Restricting the scope in the above manner has helped to researcher to undertake research project in a focused manner.

6.8 Universe and sample

Before starting the research project, the researcher has to decide whether the entire population is to be made subject for data collection or a particular group is to be selected as the representative of the entire population. When the entire population is to be made subject for data collection, it is called ‘Census method’. On the other hand, when a specific group of a universe is considered as the representative of the whole, it is called ‘sampling method’. A sample is a smaller representation of a large whole. It is composed of some fraction of the total number of units, in a defines population. Under this method a small group of the universe is taken as the representative of the whole mass and the results are drawn. This method helps to make social investigation practicable and easy.

6.8.1 As mentioned in the title of the project, the researcher preferred to limit its area of research to Pune city. The Pune city comprises huge industrial areas containing various types of industries. But majority of units are related with engineering field. Out of this universe, four large scale engineering units were selected for the study. This was done
by purposive sampling. The selected units and the reasons for selecting these specific units are given below. :-

1. Tata Motors Ltd. Pimpri, Pune.
2. Bharat Forge Ltd. Mundhwa, Pune.
3. Thermax Ltd. Chinchwad, Pune

The specialty of all these four units is that since their inception in Pune, the managements of these units felt the need to introduce training activity for all types of employees. They had firm belief that need based training programs would be able to change the mind set of employees positively, especially when consistency and continuity was maintained in the training schedules with emphasis on proper evaluation of each program. Moreover senior management executives could also realize importance of training while processing ISO certification from the beginning of 1984 on the background of growing global competition all over the world.

In the four units mentioned above, respective management authorities concentrated all their efforts with full might through works committees, quality circles meetings and by implementing such other tools to involve workers in all processes with the active cooperation of trade union leaders through the organization of training programs. At the end of every shift, the review was regularly taken regarding
reduction in wastages and in time schedule, proper use of raw material, customer care processes etc.

Further, the major change noticed by the researcher in these four units was, though the strength of workers was reduced in last two decades, the yearly turnover was increased, moreover the percentage of sale of their products were also increased at national and international level. The researcher felt that this was possible mainly due to the concentration on organization of training programs by concerned managements, though other supportive factors like favorable work culture and positive industrial relations. Another remarkable change was that there was one internal union in each of these four units without any affiliation with any political party. These led the researcher to decide in favour of selection of these units for conducting the survey.

6.8.2 The researcher has resorted to convenience sampling while obtaining primary data through survey. He personally visited the above units while training was given on certain common topics. He distributed the questionnaires to the participants and got part A and B of the questionnaire filled in. The researcher himself attended some of the sessions to get the feel of the training activity. He got part C of the questionnaire filled in on completion of the programme. Part D was given to the supervisors of the trainees after about two months, in order to know how far training was useful in developing required competencies. The responses given by
trainees and their supervisors are analysed in the next chapter.

6.8.3 The researcher was keen to know the opinions of the senior executives involved with training activity in all the four selected units. He interacted with the supervisors personally to know their views on effectiveness of training. He also interviewed senior management personnel to know how they look at training and what is their philosophy and what difficulties they encounter. Analysis of such interactions is given separately.

6.9 Sources of data

The researcher has used both the sources of data – Primary and Secondary.

6.9.1 Primary Data :

This data is collected by the researcher himself during the research process. The methods applied for collecting primary data are survey of respondent trainees and their supervisors, survey of related managers and the observations of the researcher himself.

6.9.2 Secondary Data :

Secondary data are those collected by persons or agencies for their own specific purpose. The data relevant to take topic of research was collected through both internal and external sources. The published material in the form of books and papers in journals, information available on
internet, annual reports of the selected organisations were the sources of external secondary data. The training manuals, study material distributed during training, feedback sheets collected after the training by the concerned department, training calendar were the sources of internal secondary data.

6.10 Methods / tools used for collection of data

6.10.1 Survey through Questionnaire:

The researcher drafted a questionnaire for operator trainees and their supervisors keeping in view the objectives of research. This questionnaire was distributed to the respondents from the selected companies in the following manner.

Purpose of Questionnaire

The principal purpose of questionnaire is to collect the information from the respondents who are scattered in the different departments of the organization. In this project the researcher collected the information from operator participants who were selected to attend the training sessions in their respective units. The process allowed the participants to express their views without any tension with free mind.

Types of questions

In this questionnaire, precaution is taken to use very simple language to avoid any confusion in the mind of the participants. In order to make questionnaire effective and
ensure the quality to the replies received, a researcher has paid attention to keep the logical sequence while designing the questionnaire. There are different types of questions generally useful by the research student. But in the present project the researcher preferred closed ended questions, and open ended questions. The questionnaire is divided in four parts.

Part A :- First part is devoted to collect the demographic information of the participants who attended training programs. The preliminary information of the participant is collected on the following points.

A. Name of the participant along with his designation and the name of the department.
B. His age group which is classified into four blocks.
   21-30, 31-40, 41-50, 51 & above.
C. His educational qualifications
D. Work experience in years.
E. Details of training programs attended in the past.
F. Other essential information is regarding the details of the program which covers program title, date, time, name of the faculty.

Part B :- The second part is titled as pre course pro-forma. In this, the information collected from the participant shows whether the participant believes that the training programs can improve the general performance of the individual. Next, the expectations of the participants from training programs are collected with ample choices in which the respondent is
expected to tick mark his choice. The next item is regarding training costs and tries to cover whether it is justifiable to spend on training programs by the concerned management to enhance the skills of the employees.

**Part C** :- Third part is concerned with the general impression of the participant after attending the training program. It is a type of evaluation by participant himself. It is called post course -proforma in which the impressions of the participant along with the comments regarding general evaluation of the program are to be recorded where sufficient choices are given to the participant. It covers questions indicating self evaluation by participant himself regarding pace, content and usefulness of the training program from his point of view and also opinions about the effectiveness of various methods used by the trainers.

**Part D** :- On last page supervisor’s comments are collected to confirm the effectiveness of the programs with sufficient choices to show the development in competencies of the participants after attending the training programs. The researcher contacted the supervisors in four companies to collect their impressions regarding the usefulness of the training programs in improving the performance of the trainees which ultimately results in the business growth of the company on the background of growing global competition.
6.10.2 Survey through interviews:

The questionnaire mentioned earlier is exclusively for the trainee operators. But the researcher found it necessary to contact other concerned managers and corporate heads to collect their impressions regarding the effectiveness of training programs on the total performance of the unit. Hence semi-structured questionnaire is drafted to collect their views.

The researcher interviewed the managerial personnel belonging to following categories

- Persons at the level of VP/GM/DGM who were involved with training policy.
- Training managers who were planning and implementing the training programs.
- Supervisors / managers who could observed and evaluate the change brought about by training.

Semi structured questionnaire for HR managers, Training managers and other corporate executives.

In the beginning, corporate heads were asked questions with a main focus on whether the corporate body recognises basic need to draft a training policy for the organization, if so, what is the process of identification of training needs of employees, are they consulting with the HR Manager/ Training Manager while allocating funds for training or designing training calendar every year, to what extent they find training programs effective for the progressive performance of the unit, and to what extent the outsourcing
of training programs to any outside agency would be useful to the organization.

Next, HR Managers or Training Managers are asked about designing the training programs and problems faced by them in implementation. The researcher had ample opportunity to hold dialogue with the HR Managers. He was therefore aware of following problems often experienced by them. These have guided the researcher in asking appropriate questions and obtaining the honest opinions of the managers / supervisors.

The most important question is the release of candidates for training classes. This is a very tough job for HR / Training Manager in any industrial unit. Though the orders are issued by the General Manager to relieve the workers for training, the general experience is that, the supervisors in charge of different shops find it very difficult to release those workers specifically mentioned in the list, as there is likely to be genuine difficulty in production process, which is a continued process in all shifts. If badali workers are used to replace those deputed for training, the productivity of the shop is likely to go down. The researcher has got ample experience in this regard.

Another peculiar difficulty observed by the researcher is that several times workers deputed for training are called by the supervisor for ten or fifteen minutes from the class for necessary consultation for the sudden technical problems faced by the supervisor in production process. Some times
supervisors in charge are junior with limited experience while the operators are comparatively senior in experience in specific jobs in the shops. Such experiences are common while organizing training programs in any unit.

Similarly another difficulty is that the stationery is not provided in time to the participants. Notes are ready but Xerox machine is out of order. On the same lines, evaluation sheets are not ready. HR manager has no time to look after such details. Some times evaluation sheets are collected by HR manager but he has no time to go through them.

Many times outside lecturers are invited to deliver lectures on specific subjects. The participants find their lectures very boring, naturally one by one they leave the class to go to toilet or avoid to attend class. They prefer loitering and chit chatting outside than to attend such lectures. The HR manager is held responsible in such cases and he is called for explanations.

The researcher is akin to such routine problems even in the selected units and has tried to obtain opinions from concerned heads on such kind of difficulties.

6.10.3 Observations:

The researcher has also relied on his own observation as a method for collecting data. The researcher has personally visited all the four organizations to get the questionnaires filled up. While distributing and collecting the questioners, he has held informal discussions with the respondents, in order
to understand the views expressed by them. In addition, he has himself attended some of the training programs to get the feel. He also held discussions with the trainers and other managers. Being a trainer himself, all this has helped him make valuable observations which have facilitated him to draw logical conclusions.

6.11 Data Processing and interpretation :
6.11.1 Frequency Tables :
After collecting questionnaires from respondents in the selected organisations, the researcher scanned them to verify that they were duly filled in. The questionnaires having several unanswered questions were excluded. The replies were suitably clubbed in case of some questions to denote the opinions of respondents. Coding of the questions was done to facilitate data entry. The researcher’s own observations and discussions with the respondents were the basis for classifying and editing the data. Valid questionnaires were then used for entering the data with the help of Statistical Package for Social Sciences (SPSS). Frequency tables were generated for appropriate presentation of the data. These show item-wise frequency, cumulative frequency and percentages. The frequency tables show the combined data for respondents from all the four organisations and also the company-wise data. Such tabulation has helped the researcher study the overall opinions as well as the opinions of respondents from each of the organisations.
6.11.2 Scaling and weightage points:  

Post course evaluation by trainees:

The post course questionnaire contained Q.No.2 of part C which expected the trainee respondents to give their evaluation of the course in terms of practicality, relevance clarity etc. The question had three options in the scale for which weightage points were assigned as follows: High – 3 points, Medium – 2 points, Low – 1 point.

On the basis of the above scale, points were allotted. These were calculated by multiplying the points with percentage of frequency. These were summed up to obtain total points for each opinion.

The opinions of the respondents according to the points obtained were categorized as shown below.

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Opinion</th>
</tr>
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<tbody>
<tr>
<td>0 – 100</td>
<td>Low</td>
</tr>
<tr>
<td>101 – 200</td>
<td>Medium</td>
</tr>
<tr>
<td>201 – 300</td>
<td>High</td>
</tr>
</tbody>
</table>

Similarly opinions of respondents were sought on effectiveness of various training methods in question no. 9 of part C. The options were given as follows: High – 3 points, Moderate – 2 points, Low – 1 point.

On the basis of above scale the points obtained by each method were calculated by multiplying the points with

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respective percentage of frequency and were summed up. These were assigned the scale as shown below.

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Opinion</th>
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</thead>
<tbody>
<tr>
<td>0 – 100</td>
<td>Less effectiveness</td>
</tr>
<tr>
<td>101 – 200</td>
<td>Moderately effective</td>
</tr>
<tr>
<td>201 – 300</td>
<td>Highly effective</td>
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</tbody>
</table>

**Post course evaluation by supervisors:**
Part D of the questionnaire was filled by the senior officers / supervisors of the trainee respondents. They were asked to record their opinions on the various parameters indicating change brought about by training by choosing from given options. Points were awarded to these three options as follows. Little extent – 1 point, Some extent – 2 points, Great extent – 3 points.

Points for each parameter were calculated by multiplying the points awarded to an option by the respective percentage of responses. These were summed up to obtain total points obtained by each criteria. The total points denoted the overall opinions of respondents as follows.

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Opinions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 100</td>
<td>Little extent</td>
</tr>
<tr>
<td>101 to 200</td>
<td>Some extent</td>
</tr>
<tr>
<td>201 to 300</td>
<td>Great extent</td>
</tr>
</tbody>
</table>

The research is qualitative in nature and the researcher’s observations have also served as a base for interpretation.
Hence percentages have been mainly used to interpret the data and draw conclusions. In addition the scaling method mentioned above has helped the researcher confirm his conclusions and prove the hypotheses.

6.12 Presentation of data and conclusions:

6.12.1 In the next chapter the researcher has analysed data under following heads:

- Data obtained from operator – respondents – demographic data, pre course expectations, post course evaluation.
- Data obtained from supervisor respondents – their observations regarding improvements brought about by training.
- Data obtained through interviews of senior managerial personnel, training managers and supervisors.

6.12.2 Conclusions drawn on the basis of the interpretation of data from the above categories are given in a classified manner. Later the relevant conclusions are presented in a summarized way to prove the hypotheses of the research project.

The whole experience has prompted the researcher to suggest some recommendations which may be useful to the corporate organisations in general. Finally the researcher has also identified some areas in related field in which further research can be undertaken.