

**CHAPTER - 3****RESEARCH METHODOLOGY**

- 1) The Research
- 2) Framework of the study
- 3) Objectives of the study
- 4) Hypotheses
- 5) Methodology
- 6) Technique of data collection
- 7) Use of tools and techniques
- 8) Processing
- 9) Tabulation
- 10) Chapter Scheme
- 11) Scope and limitations of study

1) **The Research** :

The present study is descriptive in approach. It is a post facto study. At planning stage of the study, specific objectives were set to provide the basis of enquiry. In the light of these objectives the scope of the study was determined and techniques of investigation to be adopted; tools to be used and pattern of substantial analysis to be followed were decided.

Present Chapter states the methodology adopted for conducting this study.

2) **Framework of the study** :

Choice of diesel engine industry in Kolhapur.

My husband owns an industrial unit in Kolhapur; he has close contacts with diesel engine manufacturers. Our contacts with a large number of manufacturers in this industry evinced an interest in me for an indepth study of diesel oil engine industry. Moreover, no study on this subject was previously undertaken by any M.Phil. or Ph.D. student. Therefore I chose diesel oil engine industry as subject of my dissertation.

**Conceptual Framework** :

The following definitions are provided for terms and concepts used in the study with a view to fix and delimit their connotations.

### 1) **Small Scale Industry :**

The Development Commission of small scale industries defined a small scale industry as "a small unit which has capital asset not exceeding Rs. 5 lakhs and employing less than 50 workers if power is used or less than 100 persons, if no power is used". Recently limit of capital asset has been extended to Rs. 50 lakhs.

There are three criteria to distinguish a small scale industry from large scale industries.

(1) Capital investment in fixed assets is not to exceed the limit of Rs. 50 lakhs.

(2) Industrial units using power and employing 50 workers and not using power and employing hundred labourers are categorised as small scale industry.

(3) Industries that are managed by six All India Boards established are not included in small scale industries.

### 2) **Productivity :**

The ratio between the output and one of the factors of input is generally known as the productivity of that factor considered.

In the broadest sense; productivity implies the full, proper and efficient utilization of the available resources of men, machines, money, power, land etc.

Productivity of a factor can be explained as below :

$$\text{Value added (VA)} = \frac{\text{Sales realisation} - \text{Raw material cost.}}{\quad}$$

Investment (K) = Replacement cost of machine.

Capital productivity =  $VA/K$

Labour productivity =  $VA/\text{labour cost (L)}$

Total factor  
productivity =  $VA ( L + K )$

### 3) Capacity Utilization :

'Capacity can be defined as the limiting capability of a productive unit to produce within a stated time and period'.<sup>3</sup>

Capacity is also explained as an output rate with given factor and product prices.

### 4) Market :

Market can be defined as closely inter related group of sellers and buyers for a commodity.

### 5) Labour :

Labour is defined by Alfred Marshall <sup>as exertion</sup> of mind and body undergone partly or wholly with a view to earn some good other than pleasure derived directly from the work.

### 6) Entrepreneurship :

It has been referred to as the capacity of an individual who perceives new ideas, bears risks and possesses competence to meet unforeseen and adverse situations with confidence.<sup>4</sup>

### 3) Objectives of the study :

Economy of Kolhapur District is closely dependent upon sugar industry, decentralised textile industry and small scale engineering

industry. Diesel oil engine industry is a vital component of engineering industry. Present study tries to discuss diesel oil engine industry in Kolhapur with its various dimensions. Therefore, the objectives the study are :

(1) To trace the evolution and history of diesel oil engine industry in India and to discuss their problems.

(2) To analyse the working of diesel oil engine producing units in respect of labour, machinery, marketing, production, capacity utilization and export.

(3) To find out the problems faced by oil engine industry regarding raw material, finance, marketing and labour.

(4) To find out future trends in the industry.

(5) To suggest measures to overcome the problems.

With a view to achieve above mentioned objectives the study tries to test following hypotheses.

4) **Hypotheses** :

- 1) Diesel oil engine industry in India is showing a declining trend.
- 2) The industry faces problems in respect of raw material, technology, finance, Government Policy, marketing, uncertainty in demand and labour.
- 3) Keeping in line with Indian trend diesel oil engine industry in Kolhapur is also showing a declining trend.
- 4) The structure of diesel oil engine units in Kolhapur in respect of finance technology, organisation, capacity utilization is changing.

- 5) This industry in Kolhapur suffers from the same problems that the industry suffers in the country.

5) **Methodology** :

All units that are associated with the production of diesel oil engines and their spareparts are the universe of the study.

The information of units regarding the name of the owner; date of establishment; type of organisation; type of production is recorded in the registers of District Industries Center's office and shop Inspector's Office.

**Sampling Procedure** :

This study is based on two stage sampling. At first stage units manufacturing and assembling diesel oil engines and producing their spare parts were listed from registers and records of DIC and from shop inspector's office. Then they were classified as

- 1) Manufacturing and assembling units - Cluster A.
- 2) Units producing spare parts and components of diesel oil engines - Cluster B.

**Cluster A** :

In this type an units manufacturing oil engines are included. There are 17 units in this cluster. All these units are included in the study.

**Cluster B** :

Cluster B includes all units which supply components and spare parts of diesel engines to manufacturing units in cluster A.

There were 220 units in this cluster. As detailed study of all these units was difficult and time consuming, representative samples were chosen. With a view to choose fully representative and unbiased sample, the method of stratified sampling was adopted.

All units described under the universe were classified by organisational pattern. As it was necessary to pick up units from each organisational pattern 20 percent sample was taken from each category as given in Table 3:1.

Table 3:1 : Sample of units from cluster B.

Organisational Pattern	Total Units	20 percent sample	Percentage to total sample Units
1) Proprietary Units	112	22	50.90
2) Partnership Units	97	19	44.09
3) Private Limited Units	11	2	5
Total	220	43	99.90

Co-operative units are not present in these clusters.

6) **Technique of data collection** :

The study was mainly conducted with the help of a pre-structured schedule. The schedule was divided in 7 parts to obtain information regarding organisational set up, education of the entrepreneur raw material, machinery, capital, labour, cost of production, future production plans etc.

Whenever any difficulty arose in making a particular question understandable to the respondent, it was ensured that the respondent fully understood the question. However specific care was taken in such situation not to allow the communication taking biased shape.

**Other Sources :**

Besides collecting data from field study it was necessary to use many other sources of information; both recorded and unrecorded reports of different kinds, official records, books, journals, Ph.D. thesis and unpublished works were used extensively.

7) **The use of tools and techniques** :

Use of traditional techniques such as ratio's, averages, percentages is made wherever necessary.

8) **Processing** :

After collection of data from primary and secondary sources; it was processed and irrelevant data was discarded.

9) **Tabulation** :

After having processed the data so collected from primary and secondary sources; it had to be sorted out and put according to our requirements. viz organisation, education, raw material, machinery, tools, marketing problems, labour problems, wages, cost of production and so on.

The data so arranged had then tabulated in multi column forms.

The data presented in tables is analysed with the qualitative



aspect added to it. It is interpreted to bring forth various dimensions and critical comments are presented to high-light the conclusions.

10) **Chapter Scheme** :

The study is divided into six chapter so as to make the study convenient for presentation and understanding.

The first chapter of the present dissertation is devoted to the discussion of evolution, development and retrogation of diesel oil engine industry in India. Second part of this chapter has a parallel discussion of the industry in Kolhapur.

The story of small scale diesel oil engine industry in India is a saga of sufferance. Second chapter discusses problems regarding raw material, technology, finance, government policy, marketing, demand, labour etc. It also gives suggestions to solve these problems

Third chapter gives an outline framework of the study. In the first instance the reasons for selection of diesel oil engine industry as topic of study are given. In the second place, the concepts used in this study are explained. Then the objectives and hypotheses of the study are stated. Fourthly, the methods of selection of sample units and of collection of data are discussed. After enurnarating the chapter scheme; the scope and limitations of the study are given.

The fourth chapter is the core of the study. It is divided into two sections. In section A of the chapter is presented the profile of units manufacturing and/or assembling diesel oil engines.

Section B discusses various problems, faced by these units. These units are denoted as cluster A units.

Second core chapter of this study is the fifth chapter. It presents profile of units, manufacturing components and spare parts of diesel oil engines. They are named as cluster B units. The problems faced by these units are discussed in the latter part of the chapter.

In the end sixth chapter puts forth the conclusions that emerge from the discussion in the preceding chapters and makes a few suggestions to improve the situation.

#### 11) Scope and limitations of the study ;

This dissertation studies units manufacturing diesel oil engines and sample units manufacturing their components.

The survey is spread to industrial workshops from tiny units having capital investment of Rs. 1,000 to small scale units having capital investment of Rs. 30 lakhs. It covers the manufacturing and assembly units located in Shivaji Udyamnagar, Shirol, Vikramanagar, and Y.P. Powar nagar. As there are no units manufacturing diesel engines in Gokul Shirgaon, it is excluded from study.

The scope of dissertation is limited to the economic study of units manufacturing only stationary diesel oil engines <sup>and spare parts</sup> ranging in capacity from .5 H.P. to 25 H.P, and units manufacturing automobile and vehicular engines and engines having higher capacities are excluded from the study.

This study deals with machine shops only. Foundries are not studied.

**References** :

- 1) Vepa P.K. - Small Industry In Serventies' Vikas Publication 1971 - P. 179.  
  
Mathur S.P. - Economics of Small Scale Industries Sandeep Prakashan 1979 - P. 4
- 2) Kuchal S.C. - The Industrial Economy of India. Chitanya Publishing house 3rd edition P. 476.
- 3) Buffa Elwoods - Modern Production Management 1969, 3rd edition P. 150.
- 4) Small Scale Industries Development Commisioner; Government of India 1971, P. 321.