CHAPTER III

THEORETICAL FRAMEWORK OF THE STUDY AND RESEARCH METHODOLOGY
3.1 HISTORICAL ASPECT OF COSTING

The science of costing is of recent origin which can be traced to the beginning of 20th century. The complex system of large-scale production in factories created new problems in accounting. The amount, number and variety of expenditures increased and many new items of costs not only entered in calculations but also attained prominence. The need for determination and control of cost as well as problems of pricing in industrial organisation necessitated inventions and application of new set of principles for accounting and thus emerged costing as an advanced facet of accounting. Its growth during the First World War (1914-1919) was rapid, chiefly owing to price controls imposed by the government and cost plus contracts. The system of cost plus contracts necessitated maintenance of cost records and ascertainment of cost of a job or service. Increasing competition and growing international trade contracts have also made industries more cost-conscious. The great depression of 1929 challenged the survival of many industries and threw them on cost reduction measures. Further, conditions prevailing during and after the Second World War made cost reduction a keynote. 

Cost is a crucial concept, which affects every aspect of life and business. The emergence of costing is a major human endeavour, the progress of civilisation and costing have almost run parallel. There is an evidence that costing was practiced by the Sumerians. In Mesopotamia in 5000 B.C. and it was certainly well developed in Florence in the middle ages. In India, Parta, literally meaning “margin” (the difference between selling price and all variable costs) has been the guiding principles with indigenous business houses since the pre-historic days. It is reasonable to
assume that people at different periods employed some measure of costing, at least, to ascertain prices to be charged to customers. However, the widespread interest in the subject could be said to have developed with the Industrial Revolution which stated off from approximately 1760.(4) As mechanisation, simplification standardisation and mass production followed in the wake of factory system; costing had to keep face with these developments. As vast quantities of diverse products began to be manufactured and that too in indirect and round-about matter; costing came to account for their cost and revenues. But as an organised discipline, costing is relatively a recent phenomenon. The ancient agriculturist and craftsman must have used it only for a limited purpose. Perhaps the first book devoted to costing titled Factory Accounts was published by Emile Gareke and J.M. Fells in 1887.(0)

Until the last 1880s; costing was in the domain of the engineer. Its integration with financial accounting began when financial accounting began when accounts started to audit the cost records. Under the influence of the financial accountant, cost accounting came to be viewed almost exclusively as a means of inventory valuation and profit measurement. Whatever benefits it offered to management were incidental. As independent discipline, it has grown only in the last three-fourths of a century under the impact of price controls and competition. It is only after the First World war that it has increasingly been looked upon as a managerial tool for planning and control, and thus as an integral part of management.

The manufacturer of a product or rendering services involves expenditure under various heads e.g. materials, salary, power etc. To a manufacturing organisation, it is useful to know the cost per unit of the product manufactured. Similarly, a company or institution rendering service e.g. hospital, canteen, municipality etc are interested in ascertaining the cost of the services it renders. In its simplest form the cost per unit is
arrived at though dividing the total expenditure incurred by the total units produced or
the quantum of service rendered. This simple method of working out the cost per unit
will only be applicable, if manufacturer produces only one product and is interested to
know only the total cost per unit. It also becomes necessary to know the cost per unit
of each item of expenditure that goes to make up the total cost like materials, salaries,
power etc. Costing lays down the principles to be followed in formulating the
methods of analysis of the expenses and for relating them to each one of the products
manufactured. For this purpose, all items of expenditure have to be recognised,
collected and analysed in a systematic manner.

3.2 INTRODUCTION

In a dynamic world a business concern has to drive through a thick fog of uncertainty
and risk. Therefore, any wrong move proves disastrous to the business enterprise.
Hence, business executives should appreciate the needs for information of the nature
of cost data pertaining to their sphere activity, for example; cost structure, margin,
profitability and so on.

Truly speaking; costing is an accounting for costs. Costs are expenditures incurred in
doing something while accounting is a measurement and communication of cost
information. It examines relationship between inputs and outputs.

3.3 CONCEPT OF COST

To guide decisions, managers require data relating to a variety of uses for example,
the cost of something. This something may be a product, a group of product, a service
rendered or any conceivable activity for which a separate measurement of cost is desired.\(^{(5)}\)

Anthony and Reece (1975)\(^{(6)}\), Arora (1988)\(^{(7)}\), Shillinglaw (1971)\(^{(8)}\), Horngren and Footer (1988)\(^{(9)}\) unequivocally opine that cost is a slippery term which represents the resources that have been sacrificed to attain a particular objective. It has many meanings and interpretations. Therefore, it should be viewed different costs for different purposes and studied in relation to its purposes. Some of the known definitions of cost have been reproduced below:

"Cost is the amount of expenditure (actual / notional) incurred on or attributable to a given thing / item" ICMA, London.

"Cost is a forgoing measured in monetary terms, incurred or potentially to be incurred to achieve a specific objective".

- By Committee on Cost Concepts and Standards of the American Accounting Association.

"Cost is the price for something" By Oxford Dictionary.

And last but not least, the most acceptable definition of cost has been given by Anthony\(^{(10)}\) that:

"Cost is a measurement in monetary terms (quantitative) of the amount of resources used for some purposes".

From the foregoing discussion on the concept of cost, it can be enumerated the following three important characteristics of costs.\(^{(11)}\)

1. That the measurements are expressed in monetary terms.
2. That cost measures the use of resources, and
3. That cost measurement always relate to a stated purpose.
3.4 ROLE OF COST INFORMATION

Of course, cost data provides base for product pricing, Nigam and Sharma. Opine that cost data provide tremendous help to business in its routine, especially product pricing and non-routine especially tender / quotation pricing decisions. Deurdin (1973) observes that the most important use of cost data is in helping to make revenue decisions like:

(i) Pricing

(ii) Product mix

(iii) Profit volume decisions in formulating policies and budgetary plans directed towards profitable operations and

(iv) in the formulation and execution of budgets and standards.

3.5 WHAT IS COSTING?

Costing these days is the watch ward for the progress of business. Numerous experts of accounting opine that proper costing is an important source of information in the present day context particularly when managers of the enterprises are functioning in the environment of uncertainty and risk.

Agreeing to the above contention Stubus (1971,p.1) writes, “Costing is the process of determining cost of doing something”. Similarly, Harley opines “Costing is a study of the expenses incurred in manufacturing a product and conducting a business in a manner that the expenses are analysed and classified so as to enable the actual cost of any particular process or unit of production to be determined with a minimum error”.
According to Morse (1978)\(^{(16)}\) "Costing is the processing and evaluation of monetary and non-monetary data to provide information for external reporting, internal planning control of business operations and special analysis and decision making."

As per the ICMA (London) terminology, "Costing is the technique and process of ascertaining the cost". In the present study, cost is determined on the basis of absorption costing where all costs fixed and variable are charged directly in the cost sheet for the specific period i.e. accounting year.

The technique to be followed for the analysis of expenses and the process by which such an analysis should be related to the different products vary from industry to industry. The method of analysing an expenditure, say supervisory salary between types of shirts manufactured in a clothing factory need not necessarily be the same as that for two types of costs in an automobile industry. Determining the principles to be followed in a particular industry depends upon the nature of the products; the manufacturing process involved; the impact of each item of expenditure on the cost of the products and management. Costing deals in detail with the elaboration of these principles, and the methods of applying these principles under the varying circumstances that would normally use in different industries.

Every manufacturing organisation ensures that it periodically gets information regarding the profits or losses that the factory is making and the position of its assets and liabilities. These are available through the profit and loss account and the balance sheet as prepared from the usual books of financial accounts, which every company has to prepare. Knowledge of merely the profit and loss made in a given period is not by itself enough for evaluating management performance, guiding management decisions or laying down policies. An intelligent study of the figures thrown out by the profit and loss account and the balance sheet lead to certain pertinent queries.
Every organisation strives to constantly improve its performance and to formulate correct policy decisions for the future. To achieve them, not only should it seek reliable answers for the queries, but should also lay down the necessary steps to achieve the desired results. Costing is an essential management tool in this direction. Unless cost of a product is worked out and a proper analysis of the expenditure is made, queries cannot be easily solved.

3.6 COST ACCOUNTING

Costing should not be confused with cost accounting. Shilliglaw says “Costing accounting is the body of concepts, methods and procedures used to measure, analyse and to estimate the costs, profitability and performance of individual products, departmental and other segments of a company's operations, for either internal or external use or both and report on these questions to the interested parties".

According to ICMA Technology (London)(17), cost accounting is the application of accounting and costing principles, methods and techniques in the ascertainment of costs and analysis of saving and / or expenses as compared with previous experience or with standards.

In brief, Nichols(18) summarises the definitions of cost accounting which emphasises both the traditional approach i.e. ascertainment of costs, and modern approach i.e. managerial uses of costs in these words; “Cost accounting is a system of cost accumulation and classification for product costing and managerial planning control and decision making purposes.”

And finally, the midest term uses for cost accounting by the ICMA Terminology is described as follows “the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and
ascertainment of profitability. It includes the presentation of information desired therefore the purpose of managerial decision-making”.

3.7 CLASSIFICATION OF COST

As stated earlier costing is the process of cost finding. In a process, various elements of cost are classified recorded and appropriate allocation of expenditure for the determination of costs is made. In classification aspect, grouping is done according to common characteristics. In a systematic placement of like items together according to their common features.

Cost can be classified in number of ways. Each way serves a different purpose. Let us discuss two most important classifications. One is dealt with functions, another deals with behaviour or variability.

3.7.1 Classification according to functions

This is a traditional classification. A businessman has to perform a number of functions like manufacturing, administration, selling, distribution and research. Cost may have to be ascertained for each of these functions. On this basis, costs are classified into the following groups.

3.7.1(i) Manufacturing cost:

Also named as production cost or factory cost, this is the cost of the sequence of operations which begin with supplying of materials, labour and services and ends with completion of products produced.
3.7.1(ii) Administrative cost:

This is a general administrative cost which includes all expenditure incurred in formulating the policy, directing the organisation and controlling the operations of an undertaking, which is not directly related to production, selling and distribution, research and development activity or function.

3.7.1(iii) Selling and Distribution cost:

Selling cost is the cost of seeking to create and stimulating demand and securing orders. Distribution cost is the cost of sequence of operations which begins with making the packed product available for despatch and ends with making the reconditioned return empty package for re-use.

3.7.1(iv) Research and Development cost:

Research cost is the cost of searching new or improved products or methods. It comprises wages and salaries of research staff, payments to outside research organisation, materials used in laboratories and research departments etc.

After completion of research, the management may decide to produce a new improved product or to employ a new or improved method. Development cost is the cost of the process which begins with the implementation of a decision to produce a new product or to employ a new or improved method and ends with the commencement of formal production of that product or by that method. Pre production cost is that part of the development cost which is incurred in making a trial production run preliminarily to formal production.
3.7.2 Classification according to variability or behaviour:

Cost sometimes have a definite relationship to the volume of production. They behave differently when volume of production rises or falls. As such, they are described as variable and semi-variable or semi-fixed cost.

3.7.2(i) Fixed cost:

These costs remain fixed in total amount and do not increase or decrease when the volume of production changes. But the fixed cost per unit increases when volume of production decreases and vice-versa, fixed cost per unit decreases when the volume of production increases.

3.7.2(ii) Variable Costs:

These cost tend to vary in direct proportion to the volume of output. In other words, when volume of output increases, total variable cost also increases and vice-versa, when the volume of output decreases, total variable cost also decreases. But, the variable cost per unit remains fixed.

3.7.2(iii) Semi-variable or Semi-fixed cost:

These costs are partly fixed and partly variable. A semi-variable cost has often a fixed element below which it will not fall at any level of output. The variable element in semi-variable costs changes at a constant rate or in lumps. For example introduction of an additional shift in the factory will require additional supervisors and certain costs will increase in lands. In case of telephone and electricity, there is a minimum rent and after a specified number of calls or units, the charges are according to
number of calls made or units consumed. Thus there is no fixed pattern of behaviour of semi-variable cost.\(^{(19)}\)

3.8 COSTING PROCEDURE

Since costing and financial accounting use same terminology and hence, the principles and procedures used are more or less similar but the application of data is different from different purpose of accounting. Therefore, it would say that costing is concerned with the financial accounting data, it would be necessary here to mention the general rules used for different items and their order of sequence which are as under in the maintenance of cost records:

(i) Classification of data / expenses / costs
(ii) Allocation
(iii) Apportionment and
(iv) Absorption:
   a. Physical movement
   b. Benefit yield
   c. Period of charges.

3.9 COST ASCERTAINMENT AND COST ESTIMATION

3.9(i) Ascertainment:

Cost ascertainment is concerned with computation of actual cost incurred. It refers to the methods and process employed in ascertaining cost. As stated earlier that in different types of industries, different methods are employed for ascertaining costs. These methods are job costing, contract costing, batch costing, process costing.
operation costing, single costing and multiple costing. (some of these methods are discussed in later part) The basic principles underlying these methods are the same but these methods have been designed to suit the needs of individual business conditions. The ascertainment of actual cost proves very useful in many cases. For instance, ascertainment of actual costs reveals unprofitable activity and losses and inefficiencies occurring in the form of idle time, excessive scrap etc.

3.9(ii) Cost Estimation:

As against cost ascertainment of actual costs, costs may also be pre-determined. Cost estimation is the process of predetermining costs of goods or services. These costs are prepared in advance of production and precede the operations. Estimated costs are definitely the future cost and are based on the average of the past actual costs adjusted for anticipated changes in future.

3.10 SIGNIFICANCE OF COSTING INFORMATION

Blocker and Keith (1972)(20), Lal (1985)(21) and Patonshetty and Palekar(1979)(22) have demonstrated the importance of costing systems of industrial products and in the management of costing for the management of industries at large. They unequivocally opine that costing provides statistics of the internal operations of a business enterprise, to the management and the concerned parties.

Cost data, according to Nigam and Sharma (1982)(23) provide tremendous information helps to the business in the age of cutthroat competition and fast developing technology. The main use of cost data could be described as under:

1. A basis for estimates and bids operation policy
2. A basis for profit planning.
3. A basis for improvement of information.

4. A basis for pricing policy.

5. A basis for measuring the economic performance.

6. A basis for reconciliation of financial and cost results and so on.

3.11 COSTING SYSTEM

Different experts have used different terms for costing systems, such as type, method, technique etc. However, these terms more or less, speak the same thing under the different heads, and for the different purposes. Technique is especially used for special purpose and under certain circumstances. In the cost accounting, systems of costing used for determining the cost of products / services under the normal condition, while the techniques of costing are used for ascertaining the cost of products / services for different purposes under the certain conditions by the management particularly for pricing decisions.


The methods of costing refer to the process and technique of ascertaining the cost of product or service. The methods of costing depend upon the type of the product, nature of industry and method of production. The methods of costing can be divided into three main groups (Agrawal, 1984)(28)

1. Job Costing
2. Process Costing
3. Farm Costing
3.11.1 Job Costing:

Job costing includes three sub job-costing systems like (1) job costing (2) Batch costing and (3) contract costing. These methods of costing applied to those industries where production is carried out as per the specific order and customer’s specification. All costs of direct material, direct labour and direct expenses are charged to the under job / batch / contract to find out the cost of unit.

3.11.2 Process Costing:

This includes mainly the following types of costing systems:

1. Process Costing
2. Operation Costing
3. Operating Costing
4. Single / Unit Costing
5. Composite Costing.

These methods of costing are applied to these industries where production processes carry out in a number of distinct processes and in a definite sequence of an identical product. Production of one process automatically becomes raw material of another and like so on. All costs of each process and cost per unit finds out by dividing the total cost of process to the number of units produced of each process. No industry uses a sole costing system for determining the cost of production but more than one costing systems have usually been used. As it has been observed in sugar industry, which uses job and process costing principles and procedures for ascertaining the cost of actual produce.
3.11.3 Farm Costing:

This is not a distinct method of costing but the costing principles and procedures are applicable to farm products in different manners. Thus, the method, which uses for determining the cost of farm products is generally known as farm costing.

In India, almost all sugar manufacturing units in a sequence of distinct batches and in a single continuous production process. As it is known that sugar is obtained through a sole raw material viz sugarcane. And thus, by and large, sugar industries use batch-cum-process costing system for determining the cost of sugar.

3.12 TECHNIQUES OF COSTING

Techniques of costing cannot be used as alternatives to the methods of costing. Both are complementary to each other. In addition to the methods of costing, techniques could be used (supplementary) for special purposes and policy making, especially pricing decisions. The main techniques of costing are described as under:

1. Standard Costing
2. Budgetary Control Systems
3. Marginal Costing
4. Differential Costing
5. Full Costing
6. Direct Costing
7. Uniform Costing
8. Historical Costing
3.13 COMPONENTS OF THE TOTAL COSTS

Prime Cost: It is an aggregate of
- Direct labour cost
- Direct material cost, and
- Direct expenses

Factory Cost: It is the total of prime cost and factory overhead. Factory overhead includes
- Indirect material
- Indirect wages, and
- Indirect expenses of the factory.

Factory cost is also known as production cost or manufacturing cost.

Cost of production: This is the total of factory cost and office and administrative overhead. It should not be confused with production cost.

Total cost (Cost of sales): This is the total of cost of production and selling and distribution overhead.

3.14 COSTING SYSTEM IN SUGAR INDUSTRY

Sugar is an important feedstock for many industries, like biscuits, confectionary, ice cream, dairy-milk products, and household purposes. It is obtained from the sugarcane. At present our country is leading in sugar production in the world.

Sugar industry uses batch-cum, process system for manufacturing of sugar in our country. As it was stated earlier that the sugar is produced from a single raw material through a single production process. Hence, the determination of cost of sugar does
not involve any complication. Generally sugar industry contains mainly two manufacturing processes, they are (i) crushing of sugarcane and (ii) sugar manufacturing and crystallisation. Both the moved in tandem, are justifying the another; the later follows the former in manufacturing process of sugar.

Crushing process is carried out in a distinct batches and each batch is called a set-up. Separate records for each batch can be maintained. The sugar production and crystallisation is a continuous process, which requires constant flow of input (wort). And thus, the output of one batch becomes the input of the next and so on.

Manufacturing sugar is a bio-chemical process and naturally leads to a situation when the input and output cannot be related to and identify by each process in the sugar industry. By and large, the sugar industry determines is cost of production not for each batch or process, but it is calculated for a specific period, may it be a quarterly or half yearly or yearly as the case may be. It has been found that the studied units have maintained cost records on a yearly basis, irrespective of number of working days or capacity utilization. And thus, it is said that sugar industry normally uses normative cost method / full cost method. For the purpose of determining the cost of production, we can use the element wise classification of cost and to represent the cost in the cost sheet, while behaviour wise classification of cost is helpful in the managerial decision-making which is reproduced as under.

3.15 ELEMENT WISE CLASSIFICATION OF COST OF SUGAR INDUSTRY

As we are aware that there are mainly three elements of cost, they are

i) Direct material

ii) Direct labour, and

iii) Overhead.
Now each three are discussed one by one in details in the following manner:

A) 1) Material
   a) Direct – Sugar cane
   b) Indirect: This is also known as process materials like
      a. Chemicals
      b. Supplies / sundries
         i. Urease
         ii. Kerosene
         iii. Adhesive
         iv. Filtercloth
         v. Work cloth
         vi. Lubricant oils etc.

2) Labour
   a) Direct Labour such as
      a. Plant operators
      b. Blenders
      c. Boiler operators, etc.,

   b) Indirect Labour like
      a. Supervisions
      b. Electricians
      c. Fitters
      d. Security men
      e. Semis.-skilled workers
      f. Unskilled workers
g. Casual workers, etc.,

c) Fringe Benefits:
(These are the percentage of wages)

3) Overheads

a) Factory / Plant expenses

a. Steam (this may be considered as direct expense)

b. Electricity (If it covers major share, if may be considered as direct expense)

c. Shift premium

d. Overtime

e. Repairs and maintenance

f. Utilities i.e., cooling water, instrument air, effluent treatment cost

g. Inqurt:

i. Gases

ii. Compressed air,

iii. Plant overhead

iv. Technical staff, such as chemist, laboratory staff, technical advisers, engineers, plant-managers etc.,

v. Quality control expenses

1. Testing materials,

2. Testing equipments

3. Testing section expenses, etc.,

vi. Depreciation on plant and machinery

b) Office and Administrative and General Expenses
a. Salaries of office staff, office building expenses, i.e., electricity, depreciation etc.,
b. Insurance premium
c. Property taxes
d. Local taxes
e. General manager salary
f. Interest on borrowed capital
g. Effluent treatment costs
h. Excise staff salaries and other miscellaneous expenses etc.,

c) Selling and distribution
a. Salesmen commission
b. Sales staff salaries
c. Warehousing
d. Advertising
e. Customer Services
f. Packaging cost if any
g. Turnover tax
h. Rent etc.,

The above-mentioned details of cost can be reproduced in the statement as below:

COST SHEET

<table>
<thead>
<tr>
<th>Row Material Consumed</th>
<th>Total (Rs.)</th>
<th>Per Unit (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Stock of sugarcane</td>
<td></td>
<td>xxxxxx</td>
</tr>
<tr>
<td>Purchased</td>
<td></td>
<td>xxxxxxxxxx</td>
</tr>
<tr>
<td>Less: Closing Stock of sugarcane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total sugarcane consumed</td>
<td>xxxxxxxxxx</td>
<td>xxxxxx</td>
</tr>
</tbody>
</table>
Direct labour

Direct Expense (i.e. Steam cost)

PKIMLCOST

Add:

Factory overhead
(Note: it is assumed that there is no working progress)

Less: Scrap value of By products
Normal wastage costs

FACTORY COST

Add: General office & Administration cost

Add: Opening Stock of finished goods

Less: Closing stock of finished goods

OFFICE COST

Add: Selling and Distribution cost

COST OF SALES

The above stated expenses may be shown as below.

BREAK DOWN OF TOTAL COST

<table>
<thead>
<tr>
<th>Variable Cost (except cost of capital)</th>
<th>Total</th>
<th>Per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sugarcane</td>
<td>xxxxx</td>
<td>xxxxx</td>
</tr>
<tr>
<td>2. Coal</td>
<td>xxxxxx</td>
<td>xxxxxx</td>
</tr>
<tr>
<td>3. Power</td>
<td>xxxxx</td>
<td>xxxxx</td>
</tr>
<tr>
<td>4. Chemical</td>
<td>xxxxxx</td>
<td>xxxxxx</td>
</tr>
<tr>
<td>5. Variable Wages</td>
<td>xxxxxx</td>
<td>xxxxxx</td>
</tr>
<tr>
<td>Total Variable Costs</td>
<td>xxxxxx</td>
<td>xxxxxx</td>
</tr>
</tbody>
</table>

Fixed Costs:

| 6. Salaries & Wages                   | xxxxxxx| xxxxxxx |
| 7. Excise staff expenses              | xxxxxx | xxxxxx  |
| 8. Repair & maintenance               | xxxxxxx| xxxxxxx |
| 9. Water charges                      | xxxxxx | xxxxxx  |
| 10. Administrative expense            | xxxxxxx| xxxxxxx |
| 11. Depreciation                      | xxxxxx | xxxxxx  |
| Total Costs                           | xxxxxx | xxxxxx  |

Profit (Policy)

Selling Price
3.16 TREATMENT OF THE MAIN ELEMENTS OF COST OF THE SUGAR INDUSTRY

3.16.1 Materials:

Sugar Cane:

Sugarcane is a basic raw material for sugar production. As it is known fact that sugarcane is supplied by farmers or growers. An important question arises here is about the procurement of sugarcane by the sugar factories. In India, the Central and State Governments fix the price to be paid to the sugarcane growers. The Agriculture Prices commission was set up in 1965 to advise the government on the price policy for agricultural commodities including sugarcane with a view to an integrated price structure with due regard to the interest of producer and consumer. The Government of India did not revise the Statutory Minimum Price of sugarcane for years 1980 to 1983. The price was marginally increased by 50 paise per quintal in 1984. The Commission in its earlier reports on policy for sugarcane had observed that the fixation of statutory minimum price at a level lower than that recommended by the commission not only adversely affected the supply of sugarcane but also resulted in escalating demand for sugar. The CACP in its support had advised against the fixation of State Advised Prices (SAP) and had stated that the State Governments should not increase the levels of State Advised Price any further and gradually the system of State Advised Price be done away with. The suggestions of the commission, however, has not found favour with the State Governments so far. In many States, the SAP, were fixed at levels in conformity with the price trends with other competing crops. With the announcement of the SMP, State Government simultaneously announced high SAPs, despite being urged repeatedly to refrain from announcing such cane
prices as only the Central Government had the authority to fix the sugarcane price under the Sugarcane Control Order 1966.

**Process Materials and Consumable Stores:**

1. **Process Materials:**

   In the central stores records pertain to chemicals to be used in manufacturing processes have been maintained under the perpetual inventory control system indicating the receipts, issues and balances at the end of a specific period. Rewards regarding usage of chemicals can be obtained from the stores ledgers so that the cost of materials issues and valuation of stock can be made. Usually, the valuation of stock is made on the basis of the generally accepted stocks valuation method like FIFO, LIFO, Weighted Average etc., the cost of chemical used can directly be charged and these should be treated as factory overhead cost.

2. **Consumable stores / sundries stores:**

   These items relate to "e" category and therefore, these have been treated a factory overhead cost.

3.16.2 **Labour:**

   Sugar industry in the country employs about 3.6 lacks person including a sizable number of technical staff of highly trained engineers and sugar technologists. The total wage bill including other benefits amount to over Rs. 800 crores per year.

   Labour is divided into two aspects (i) Direct labour and (ii) Indirect Labour.
3.16.2 (a) Direct Labour:

In sugar, the number of direct labour is very big. As per the accounting principles and procedures, it should be treated as primary cost item.

By behaviour wise classification of cost, direct labour expenses should be treated as variable cost.

3.16.2 (b) Indirect Labour:

Similarly, the number of indirect labour is also big. It should be treated as factory overhead especially fixed factory overhead.

3.16.2 (c) Fringe Benefits:

These are calculated on the basis of wages paid to the workers and therefore, these should be charged proportionately to direct and indirect wages. Treatment has been made accordingly.

3.16.3 Overhead:

According to the cost accounting principles and procedures, overheads contain mainly three types of expenses they are (1) factory overhead (2) General office and administrative overhead and (3) selling and distribution overhead. These are discussed as under.

A. Factory Overhead:

In sugar industry, the power and fuel costs are one of the major costs in total cost. If, they are generated within the factory, proper records showing the quantity and the cost of power and fuel generated and consumed for the production of sugar should be
maintained in such a way that it may enable the company to furnish necessary particulars to the cost centres. The cost of power and fuel consumed by the sugar unit and allocated to the respective department should be based on the normally accepted accounting principles and these should be followed consistently.

B. Expenses of Service Departments:

In sugar industry certain departments provide ancillary services to the production departments like water section, air section, gases, compressed air, laboratory quantity control etc., These departments perform their functions continuously and the amount of expenses expended by the service departments are not feasible to measure or identify for each unit or process. Therefore, the expenses of services department have been treated as fixed factory expenses in sugar units and apportioned to the production departments on some arbitrary basis as factory overhead costs.

C. Workshop, Repairs and Maintenance:

This is an indispensable part of any business organisation. It contains mainly four components, they are

i) Materials required

ii) Manpower to install them

iii) An overhead for supervision and

iv) Scheduling

These may cover major proportions to the total cost. These should be charged as fixed factory overhead.
D. Depreciation:

This is an important element of cost. For the purpose of calculation of depreciation on fixed assets, the Department of Company Affairs vide its circular no 2189, no. 1/17/87 CL V dated 7/3/89, Ministry of Industry, Government of India, New Delhi has clarified that the rates as contained in Schedule XIV to the Companies Act, 1956 should be viewed as minimum rates, and therefore, a company will not be permitted to charge depreciation at rates lower than those specified in schedule XIV. The company should take into account the true commercial depreciation rate, i.e., the rate that is adequate to write off the asset over its normal working life. Where such rate is higher than the rates prescribed in the Schedule XIV and/or the true commercial depreciation rate prevailed in the similar type of industry, they may be provided with proper disclosure by way of a note-forming part of Annual Report. The depreciation charges may be treated as fixed factory overhead or as the case may be.

E. Effluent Treatment Cost:

Effluent treatment is an important concept in an industrial organisation. Sugar industry too is concerned about the air, water and soil pollution it can create. Hence installation of pollution control instruments or equipments is required. Production of sugar generates a semi-solid waste / by product viz; molasses which is highly polluting. Effluent treatment and disposal of it have become very acute problem. To deal with the situation and adhering to the Government directions, the sugar manufacturing units also have started installing effluent treatment devices. The effluent & treatment cost / expenses from a part of production cost and while calculating total cost, it is also considered.
F. Office and Administrative and General Expenses:

These expenses are period cost and they have been accumulated as and when they are incurred within the factory for a specific period and should be charged off in the cost sheet.

G. Selling and Distribution Expenses:

By and large, the selling and distribution expenses are charged for at fixed period while some are dependent on sales volume / values for example. Salesman commission. The former should be treated as fixed cost and the latter tend to vary with sales and charged accordingly. Although, expenses under this head have been treated as fixed and selling and distribution overhead and charged off in the cost sheet directly.

H. Packaging:

Usually, sugar is sold to domestic consumption purpose and industrial purposes also. As per the requirement, 40% of sugar production is supplied to the Government, usually it is packed in bulk and transported to the godowns and open market distribution is conducted by packing sugars in bags of one quintal. And supply to industrial organizations is conducted by following their orders. Hence, packaging cost is also a part and parallel of total cost.
PARTE
PREVALENT PRICING POLICY IN SUGAR INDUSTRY

3.17 INTRODUCTION

There is no standard formula for pricing of any product or services. And therefore, the pricing policies vary from industry to industry, product to product, country to country, market to market, customer to customer and like so on. A large number of pricing methods have been found in the market. It is not practicable to discuss all such methods and, hence, only the pricing policy used by the sugar industry or for the sugar industry product has been discussed in the following paragraph.

Government imposes industrial licensing to restrict the mushroom growth of certain industries and to protect the interest of the public at large. As sugar is a controlled commodity and therefore, without the permission of the Central and State Governments, the producer cannot undertake the selling and distribution aspects. As sugar is sold through PDS and open market mechanism, the government controls the prices to be charged in levy system and free sale system. Now, we focus on the various important aspects of the pricing policy of sugar.

Determination of price is a crucial managerial function in any business organisation. Price reflects the account of which commodities or services charge hands. Price is an important instrument in the hands of the businessman to raise fund or / and to earn gain. Revenue represents the excess of price to cost. And, thus price affects the profitability and working of the firm.

3.18 WHAT IS PRICE?

Price represents the amount of money, which is needed to acquire a product and its accompanying services.
From various viewpoints: Economists define price as the exchange value of product / service always expressed in money and the value of the products determined by the market forces of demand and supply.

Accountants define pricing begins with cost and adding margin they build up to a price.

A comprehensive definition of price has been given by well known authority of accounting which covers the views of economists, accountants and the owners of the firm is described as below:

According to Shilling Law(29), a company's long term survival depends on its ability to obtain prices for its product that will cover all its costs and still leave satisfactory profit adequate to compensate investors for the use of their capital”.

Sugarcane, being a basic raw material to be used in sugar production, price of this agricultural produce and sugar is important to the sugarcane growers and for the management of sugar industries. Buyers are no less affected by these prices be they consumers, industries or exporters. As incentives for raising production and rational allocation of resources, as also for acquiring marketable surplus, there is no social interest involved in these prices. It is, therefore, considerable significance that we have such a level and structure of prices that satisfy all these varied aspects of the economy.

Any policy that is designed to pursue a desirable set of agricultural prices requires a prior knowledge about the behaviour of prices. This provides a basis for the formulation of objectives and the selection of instruments for the purpose.
3.19 DETERMINANTS OF PRICE

Ever since the time of Marshall, it is well known fact that the price of a product / services is determined by the demand for it and its supply. Nowadays, these factors are indisputably the two most important factors in pricing decisions. Both factors are as important as the blades of a pair of scissor in cutting cloth. There are other factors that also play an important role in the pricing processes. According to Dabana(30), pricing is not an end in itself but a means to an end. Besides these, the cost also plays an important role in pricing decisions. As it is said that cost provides base for pricing decisions. The cost is a hub around which the price structure rotates. Further, Brenner(31) says that the pricing decisions involve considerable guesswork about factors like business conditions, political events and international relationships and probable reaction of competitors and consumers.

In addition to the above mentioned factors some other factors also affect in the pricing processes such as firms goals legislative provisions, social responsibilities, State and Central policy, for example the compulsory supply of 40% quota to the Government and controlled policy adopted by the Government affect the sugar industry.

The movement of agricultural prices over the last many year reveals two major features: rising trend and many fluctuations.

3.19.1 Rising trend:

Except for a few years in the beginning of planning since 1951, there has been an almost continuous up trend in agricultural prices. The same up-trend can be seen in the prices of sub groups like food articles, and non food articles, as also in individual commodities or group of commodities like cereals, pulses, fruits and vegetables,
oilseeds etc., of course as among there components, there are differences in the extent of price rise, also in their up climb and down dips from year to year. However, over the entire period there is no doubt about the rise.

This up trend has contributed considerably to the rise in General Price Level, as agricultural commodities carry a heavy weight in Index Number or Wholesale Price. In the early years covering the First Plan, the fall in agricultural prices, largely because of bumper crops, pulled down the general price level. In a similar fashion the later rise in the general price level can be ascribed to a considerable extent to the rise in the prices of agricultural products. This generalisation remained valid till recently since when the non-agricultural prices such as those of fuel and manufactured products rose very sharply to contribute much to the rise in the general price level.

3.19.2 Large Fluctuations:

Another significant aspect of the price behaviour has been the fluctuations in the prices of agricultural products. The up and down movements have been many, and quite big indeed. And these have characterised commodities both in the food grain group and non-food grain group. However, on balance, the increases have been larger than the decreases, so that the net effect has been a rising price curve. These fluctuations cause upsets to the prices of agricultural products. And through that these make the general price index to fluctuate. Since these fluctuations are caused by uncertain weather conditions, this behaviour of agricultural price results in instability in the general price situation, which is also uncertain and unpredictable in its occurrence.
3.19.3 Demand Factors:

Overall there has been a continuous rise in demand for agricultural products with large and rapidly increasing demand for food articles. As a result, the prices of certain goods rose higher than those of others. Rise in demand took place in several counts, which may be listed as follows.

There is the increase in demand for consumption, both because of a rapid rise in population and a rise in incomes of some sections of the populations. Demand also rose with industrialisation of the country requiring large entities of agricultural raw materials.

There has also been an increase in the demand for inventory / stock building needed of different categories of demand (Consumption raw materials exports) there has been some increase in demand emanating from the export sectors.

Often, there has also been an increase in the demand for speculative purposes both on the part of seller stockiest to take advantage of rising prices and sometimes on the part of consumers to protect themselves from further price rises. Although demand increases has varied in respect of different segments of the total demand in some of the cases there has been a steady rise like for instance in the demand for consumption and for raw materials for industries. Demands for exports and for speculative holdings by sellers and for hoarding by the consumers, have been fluctuating causing ups and downs in the price level besides raising in general, the demand for agricultural products.
3.19.4 Supply factors:

Equally significant are the factors on the supply side, raising the price level as also causing fluctuating prices of different products. One important factor is the low growth rate of agricultural production in particular food growing for very many years. Even at present the output of inferior cereals like Javar, Bajra and Maize as also of pulses and oilseeds continues to be plagued by a very inadequate growth rate. Note only that growth is not satisfactory, it is characterised by large fluctuations. Since about 70 per cent of the land cultivation is still without assured irrigation and the rain feed areas are suggest to uncertain rains, the large output variations are the inevitability of result. With the spread of new agricultural technology there is no doubt lesser instability than before. But the impact of the new technology has been limited to a few places like Panjab, Haryana, and some places in Utter Pradesh and to a few crops like wheat, and to an extent rice. Hence, the forces to counter instability in output have been inadequate to compensate for the forces causing fluctuations.

3.20 METHODS OF PRICING

Pricing can be set by adopting any methods of pricing. Each method specifically aims at fulfilling a particular objective

The pricing methods are:

- Cost plus pricing
- Marginal cost pricing
- Discriminating pricing
- Import party pricing
- Administrative pricing
- Return on investment pricing
3.21 PRICE FIXATION BY THE GOVERNMENT

The government of India fixes prices in respects of various essential commodities and services. In order to ensure fair and equitable prices, if necessary to examine the cost structure of various concerns of some industries and fair return on capital expected for further development of the same industry. In order to do that, a price fixing mechanism of the Government is successful, due consideration should be given to the following aspects.

1. Suiting specific need of the industry, dividing the vast country into suitable regions.
2. Defining optimum capacity and productivity in each industry.
3. Reviewing the prices of raw materials, wages and other items.
4. Assuring continuous availability of materials, power and other required resources.
5. Controlling selling and distribution channels.

3.22 MINIMUM PRICE FIXATION

A minimum pricing approach is necessary both for pricing products generally and also for pricing specific items. A minimum price is the price which exactly covers the incremental cost of making the items sold and opportunity cost of the resources consumed in manufacturing the items. Where there are no scare resources and the company has spare capacity, the minimum price of a product would be an amount which equals the incremented costs of making it and any price in excess of the minimum amount will provide an incremental contribution.
Where there are scare resources and a company has more than one products minimum price would include an allowance for the opportunity cost of using some resources to manufacture and to market the products.

3.23 ROLE AND FUNCTIONS OF PRICE POLICY

For a right level price and right price structure, an appropriate price policy is a must. Along side and as a part of the price policy two important instruments are buffer stocks and imports. Also Government policy plays vital role in determining price policy. As for the price-policy is concerned, it has to be such as ensures the realisation of manifold objectives such as increase in production, optimum crop-pattern, adequate remuneration to the farmers, reasonable prices of goods used for industrial outputs for consumption and for exports and healthy terms of trade with the non-agricultural sector. The way price policy can achieve these aims may be split out terms of its role and its functions.

3.23.1 Role:

There are two things that a price policy can achieve and there by promote furtherance of the above-mentioned objectives one is concerned with the correction of market imperfections in the agriculture economy. Some of these arises because of competition with the manufacturers against whom the farmer is weak for several reasons. Farmers, for example, are too small, too many, too scattered and almost totally unrecognised as compared to manufacturers. There are again several gaps in agricultural marketing arising from lack of information, existence of unregulated markets inadequate storage capacity etc. A comprehensive price policy can do a lot in
correcting these distortions in the market structure and therefore, in prices, by letting them reflect demand / supply factors.

Second is to make price do what they are supposed to do i.e. indicate or signal to the producers the demand preferences of the society, conformation to these signals will lead to such an allocation of resources to the production of different commodities that an optimum utilisation resources will be the result. Flowing from these price signals will be the desired production, cropping pattern, remunerative incomes to the farmers and assured supply of essential commodities to the consumers. In brief an appropriate price-policy will promote the fulfilment of the desired objectives.

3.23.2 Functions:

Given the role what sort of price policy is needed to achieve it? The answer lies in so designing the policy that it sub serves the over all objectives. The appropriate design of the required policy can be identified in terms of the varying emphasis on the different functioning of prices. One is its allocate function, i.e. directly the resource use as per market signals. This promotes the gradual adjustment of all prices (including non agricultural price) towards an equilibrium level. In the present state of affairs that obviously is the long-term function. But then this has to be implied in the medium and short-term functions of prices.

Second is the medium term function to encourage investment in agriculture. This requires keeping the terms of trade in a shape that agricultural producers incomes are protected, so that they are induced to make more investments. This protection of farmer’s income can also be the basis for creating stability which is very much needed for investment decisions.
Third is the emphasis on the short-term function of prices. It consists in creating certainty in respect of prices of different crops. This not only keeps prices stable, but also provides a basis and guidelines for a desirable cropping pattern.

To put these three functions together, one can say that the price policy should eliminate, or at least moderate the short-term fluctuation, which has so often characterised agricultural prices in India. At the same time while prices are made to promote investment in agriculture, these also move towards their long-term equilibrium level.

3.24 GOVERNMENT POLICY

The current policy of the government in respect of agricultural prices took a firm shape with the inception of the Agricultural Costs and Prices Commission in 1965 (formerly Agricultural price Commission) since than it has to its credit certain achievements, although some weaknesses have also crept in it.

3.24.1 Main objectives:

While the aims have often varied depending upon circumstances, one can capture the totality of policy objectives in terms of the following four elements:

One is to encourage production by assuring the producer that the prices of his produce will not fall below a certain minimum. This is to cover costs and provides incentives. With the use of costly inputs as part of improved technology, such an assurance becomes all the more necessary for boosting production. Again, the level of prices as also the structure of prices are to be such as to ensure a crop pattern that makes for an efficient use of land and resources and meets the various demands of the economy.

The second objective is to ensure relevant income levels to the farming community.
The main emphasis in this sphere is to aim at reasonable terms of trade between agricultural and non-agricultural sector. The third objective relates to consumers. The purpose is to prevent excessive rise in prices and thereby to protect the interest of consumers. This is supplemented by Public Distribution System to make available certain essential consumption goods to consumers at prices below the market prices. And the fourth objective is in respect of stability in prices. The price policy aims at stabilising prices to introduce certainty in the price situation in the agricultural sector as also in the economy a whole.

3.24.2 Major instruments:

Broadly, the Government has employed three types of instruments to achieve its policy objectives. One of these is with regards to the minimum support guarantee to producers so that in the event of a glut, prices are not allowed to fall below the minimum economic levels. Another aspect of minimum support / procurement prices are generally announced before the start of the sowing season. These prices are fixed for major agricultural commodities. The second instrument is the fixation of issue prices at which fair price shops sell cereals like wheat, rice etc. this is intended to safeguard the interests of low income group consumers; although there is no bar on anyone, including rich consumers, to buy from these distribution depots. And third is the maintenance of prices within limits through buffer stock operations. This is to mitigate fluctuations in prices.

3.24.3 Agricultural Cost and Price Commission:

In deciding on prices, the Government seeks the expert advice of the ACPC. Its recommendations are not always accepted but these do carry big weight with the authorities. The Commission under its terms of references provides “advice on a
continuous basis on agricultural price policy and price structure in the context of the need to raise agricultural production an give relief to consumers”\(^{(32)}\).

The trust of policy is to evolve a balanced and integrated structure in the perspective of the overall needs of the economy. Within this policy frame the Commission is specifically asked to keep in view the following three things:

1. To provide incentive to the producer.
2. To adopt improved technology, maximised production and develop a production pattern appropriate for national requirements.

To ensure rational utilization of land and other production resources to keep in view the likely effect of the price policy on the rest of the economy particularly on the cost of living, level of wages, industrial cost structure, terms of trade etc.

**RESEARCH METHODOLOGY**

**3.25 INTRODUCTION**

India is a vast country and population-wise stands at number two position in the world. As many as 300 million Indians constitute a middle and upper middle class with purchasing power equal to that of Europe. As earlier stated, the Indian sugar Industry is the second largest agro-processing industry in our country. The sugarcane farmers and sugar industry have many achievements to their credit which can be listed as follows:

1. It has enabled the country to be self-reliant in a highly sensitive essential commodity of mass consumption providing per capita per annum energy equal to 56 million calories.
2. It has given the pride of place to India being the biggest producer of sugar in the world, an achievement quite rare as compared to other sectors.
3. It has enabled the transfer of resources equal to 3281 million US Dollars to the country-side per annum.

4. It has provided raw material like molasses as feed stock to alcohol and chemical industries and in the process has generated total turnover of 18750 million dollars.

5. It has generated massive resources for both Central and State Government of the order of 500 million dollars per year.

The Indian sugar industry has formidable challenges ahead. The requirement of sugarcane and sugar till 2000 A.D. are shown in the Table 3.1

<table>
<thead>
<tr>
<th>Year</th>
<th>Target of sugar Production (in Million tones)</th>
<th>Estimated sugarcane Production (in Million Tones)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>17.61</td>
<td>274.00</td>
</tr>
<tr>
<td>2001-02</td>
<td>18.41</td>
<td>282.00</td>
</tr>
<tr>
<td>2002-03</td>
<td>19.25</td>
<td>287.55</td>
</tr>
<tr>
<td>2003-04</td>
<td>20.13</td>
<td>300.73</td>
</tr>
<tr>
<td>2004-05</td>
<td>21.06</td>
<td>314.53</td>
</tr>
<tr>
<td>2005-06</td>
<td>22.03</td>
<td>329.01</td>
</tr>
<tr>
<td>2006-07</td>
<td>23.04</td>
<td>340.87</td>
</tr>
<tr>
<td>2007-08</td>
<td>24.11</td>
<td>356.63</td>
</tr>
<tr>
<td>2008-09</td>
<td>25.22</td>
<td>371.14</td>
</tr>
<tr>
<td>2009-10</td>
<td>26.39</td>
<td>390.44</td>
</tr>
<tr>
<td>2010-11</td>
<td>27.62</td>
<td>408.59</td>
</tr>
</tbody>
</table>

Notes:
(1) Recovery %Cane: 10.20%, 10.30% and 10.40% for periods 1997-98 to 2001-02, 2002-03 to 2005-06 and 2006-07 to 2010-11 respectively.
(2) Sugarcane drawl Rate: 63%, 64% for 2000-01 and 2001-02 and 65% all the balance periods.

Source: Co-operative Sugar March'98 Vol.: 29 P.473
It is obvious from the above figures that the Indian sugar industry will have to step up its sugar production by nearly 12 million tones by 2010 A.D. The question is whether this is possible and what measures are required in areas of sugarcane and sugar processing for realising the desired goals.

In a dynamic world, a business concern has to drive through a thick of fog of uncertainly and risk. Therefore, any wrong move proves disastrous to the business enterprises. Hence, business executives should appreciate the needs for information of the nature of cost data pertaining to their sphere activity, for example, cost structure, margin, profitability and so on.

In the environment of spiralling prices and galloping inflation, the survival of business organisation has become very difficult. It is necessary to know how much margin (profit) is required for the survival, growth and expansion of the business enterprises. An answer to this question can only be attained after knowing the cost as the cost per unit is the hub around which the price structure rotates. It is aptly remarked that "the cost is a fact; estimate is an opinion and the price is a policy". Price is normally decided by adding a margin of profit to the cost of production. As it is stated that the price fixation is a matter of management policy. And hence, it is required for any production activity to know various aspects of economics such as the elements of cost, their weightage in the cost of production, total cost, productivity, profitability etc.

3.26 IDENTIFICATION OF PROBLEM

No country in the world has as many sugar factories as India's 440 plants. Most of the efficient sugar producing countries have consolidated by having smaller numbers of large sized sugar plants to achieve economies of scale, but we in India still believe in
increasing the number of sugar plants rather than their capacities. Therefore a study on sugar production economies would immensely be helpful for ascertaining the profitability of sugar factories selected for the present study. Hence in this study, profitability is analysed in terms of cost structure of sugar factories and pricing aspects of the same. The consequences of unawareness of production economies can cause tremendous financial and business loss leading to the sickness of sugar factories. This also means a heavy loss to the nation’s and public welfare. To avoid such calamity in sugar industry, it is urgent need of the hour to make an in depth analysis of the cost structure, various elements of cost, impact of each element on the profitability of sugar units and about the various aspects of pricing fixation of sugar.

As other aspects like installed capacity, crushing period, cane crushed during the period, actual sugar production, the compulsory quota to be given to Government for PDS and various elements of total cost are major considerable points; all these are studied in detail. It is known fact that under present government policy, 40% of the sugar production is given to the government for levy market operation and that too below cost of production. Hence, it is interesting to study the costing and pricing mechanism followed by sugar factories. The system of PDS is usually managed by the dual market mechanism.

(1) Open and (2) Controlled.

The objectives of the two markets are different:

While the open market aims at maximisation of profits; the controlled market caters the welfare of the people especially for those who live below poverty line. Consumers respond to the competitive choices offered by both the markets. Open market offers the attractions such as large number of sellers, varieties, choices, credit dealing, bargaining etc. with sole aim of earning maximum profit. The controlled market on
the other hand, offers benefits such as stability of price, certainty of supply etc. with
the basis motive of maximising social benefit. Obviously the maintenance of price
and supply level of sugar is against the spirit of open market. Similarly, acceptance of
abnormal fluctuations in prices and allowing the supply scarcities is against the
characteristics of the controlled market. These two divergent motives, thus, may never
coincide. If domestic production is below the target level, a seller in open market can
easily increase the price in order to maintain or even enhance the profit margin. If
domestic production is sufficient, a seller can hold the surplus and can easily create
artificial scarcities in order to safeguard the existing profit margin. If the controlled
market attempt is made to keep supply and demand at the same level so that
consumption could be maintained at stable prices. This is particularly difficult task in
view of uncertain domestic production and the consequent uncertainly of procurement
levels and buffer stocks. Increasing dependence on imports, in this context, is quite
obvious.

The sugar market, open and controlled as well offers various attractions to the
consumers which may be grouped under the main hands of “price front”, “supply
front” and “service front”. All of them provide various benefits to different consumers
according to their socio-economic status. For example, while salaries and lower-
middle class people whose income is fixed are attracted more towards price stability,
credit sales and undisrupted supplies, the upper middle and rich class do not bother
about them and pay more attention to the services offered by these market. On price
front, there are two major attractions. One is the price level and other is the degree of
fluctuations. Both are important to the consumers, who live on almost fixed income
level. An inflammatory trend and its abrupt fluctuation both have heavily taxed
household beget of a consumer and therefore the preference never goes in favour of
the market where such trends prevail. Usually, in the open market, the market prices of sugar and its fluctuations throughout the country remain considerably higher than the controlled price. In this case the consumer naturally prefers to go to the controlled rather than the open market.

The open market offers sales not only on cash but also on credit. The sales on credit may be total or partial, occasional or usual, seasonal or unseasonal and weekly, monthly or annual. This is so attractive to the consumers that even after realising the fact that the seller may charge more than the prevailing market price or he may cheat by maintaining false accounts and they actually collect more than due, they still insist on going to open market. A consumer knows that all controlled shops price are given and there is little chance of being deceived or cheated. But the strict cash dealing coupled with the tight budget does not always allow him to be ready for cash payments. Thus, both the markets offer satisfaction and dissatisfaction to the consumers. If the consumer prefers to go to open market, his satisfactions are in bargaining choice among different varieties of sugar and credit dealings. But he equally experiences disadvantages in the form of high prices, its abrupt fluctuations disuniformity; dishonesty and cheating. The controlled market, on the other hand assures stability of prices with minimum fluctuations, but at the same time insists on cash payments, no choice with regards to variety or brand and shows in this respect, strict administrative disciplinary responsibility.

3.27 NATURE AND SCOPE OF THE STUDY

In the present study an attempt has been made to ascertain the cost and price of sugar. Though, the fixation of price of sugar up to large extent, is the subject of Central and State Government and it is performed by the BICP. The prices fixed by the BICP
provides base to the sugar industry and it is uniformly applicable to all the sugar factories. It may not be fair to all though they have to follow the prices suggested by the BICP. The sugar industry also adheres the prices directed by the Center. Especially looking to the compulsory quota of sugar to Central Government for PDS and that too below the cost of production has made the task difficult to sugar industry to fix the price to be charged on free sale sugar. Because such price should cover all the element of cost including arising out of government quota and plus element of profit at least for the survival and some sort of growth to the sugar factories. And, therefore, in the present study an attempt has been to investigate into the chief determinants of the price of sugar. It has been always argued that whatever the prices suggested by the BICP were not and never affordable to the sugar industry and therefore, most of the sugar factories are facing a problem of sickness. To avoid such calamities in the sugar industry, the urgent need of the hour is to frame an ideal model of cost and price of sugar. Thus, the main thrust of the study is to identify the responsible factors which impair the working and the liquidity of the sugar industry and also modal of sugar price structure.

3.28 OBJECTIVE OF THE STUDY

The chief objectives of the study are as under:

1. To examine the cost structure of the sugar industry.

2. To examine the main elements of the cost and their weightage in the cost structure of the sugar industry.

3. To examine changes which have been taken place in the cost structure during the period under study.
4. To examine the methods of costing and techniques of cost control and cost reduction used by the sugar industry.
5. To examine the prevalent pricing practices in tune with the pricing theories.
6. To examine the sources of major inputs like sugarcane, fuel etc. and their impacts on cost and pricing of sugar.
7. To examine the Center as well as State Government and their impacts on cost and pricing of sugar.
8. To examine the existing pricing pattern of BICP, influences on the sugar industry.
9. To examine the cost benefit analysis aspects of the industry.
10. To study the cost volume profit relationship in sugar industry.
11. To examine the problems of sugar industry and to suggest an economic viable pricing model for the sugar industry.

3.29 HYPOTHESES

In the present study an attempt has been made to investigate into established fact that the sugar factories suffer from the heavy taxes, transportation charges and the price variations which are resulting into unused installed capacity leading towards heavy losses. To provide a frame work to investigate, a purposeful analysis of cost and pricing has been taken up. In the course of analysis, the following hypotheses have been examined as offshoot points:

1. Operating efficiency is dependent on availability of main inputs like sugarcane, fuel, power etc.
2. Operating efficiency is dependent on the States as well as Central policy pertaining the prices of major inputs especially sugarcane and power.

3. Operating efficiency is dependent on manufacturing processes of the sugar industry.

4. The cost of sugar may vary from sugar factory to factory which is directly dependent on the sugarcane crushing period.

3.30 RESEARCH METHODOLOGY

A research design is a logical and systematic planning of a piece research. The research design has to be geared to the availability of time, energy and money, to the availability of data to the extent to which it is desirable or possible to impose upon persons or individuals or social units or institutions which might supply data. According to Burchman (1954) (33) “There is no such thing as a single or correct research design, a research design represents a compromise dictated by many practical considerations that go into research”. Thus, a research design is not highly specific plan to be followed without deviations, but rather a series of guide points to be headed in right direction. It is always tentative. As the study progresses, new aspects, new conditions, and new connecting links in the data come to light, and thereby it becomes necessary to change the plan as circumstances demand. In the present context, however, the research design includes geographical area of Gujarat State, population, sample, research tools, procedure of data collection and procedure of classification of data. The procedure of data classification and presentation in the tables shall be followed by the basis finding of questionnaire (research tools), annual reports etc.
3.31 GEOGRAPHICAL AREA OF STUDY

This study relates with the investigation into the cost and pricing practices prevalent in the sugar industry especially of the units located in Gujarat State. Gujarat State was separated from the Maha-Gujarat State, was combination of existing Maharashtra and Gujarat. Both the State were separated from the Maha – Gujarat State on 1/5/1960. Gujarat State is situated on the west cost of India between 20.1 and 24.7 degree North latitude and 68.4 and 74.4 degree East longitude. It is surrounded by the Arabian See on West, Pakistan in the North-West, Rajasthan in the North-East, Madhaya Pradesh in the South-East and Maharasthra in South. The State, according to 1991 Census Report, has an area of 1,95,984 Sq. Kms, and population of 4.32 crores representing 5.91% and 4.87% respectively on the area and population of the Indian Union.

Gujarat State is mainly divided into four regions: (1) Kutch (2) Saurastra (3) Gujarat (Central) and (4) South Gujarat. For the purpose of this study, six sugar unit shave been covered. In fact in Gujarat, majority sugar units are located with a domination South Gujarat.

Gujarat is the second largest industrially developed State of the Country. Certain Key industries have been established here. These are fertilisers, chemicals, pharmaceuticals, petroleum, dairying, textiles etc. More and more industrial units are likely to be set up in the Gujarat in the near future due to the liberal policy of Center as well as State Government and it is predicated that Gujarat State is likely to be number one industrial state of the country in the beginning of new millennium.
3.32 POPULATION

The total number of sugar factorise in Gujarat is 26. They are

1. Khedut Sugar, Bardoli
2. Sahkari Sugar, Gandevi
3. Madhi Sugar, Mdahi
4. Chalthan Sugar, Chalthan
5. Maroli Sugar, Maroli
6. Valsad Sugar, Valsad
7. Sayan Sugar, Sayan
8. Mahuva Sugar, Bamnia (Karchelia)
9. Ukai Sugar, Vyara
10. Ganesh Sugar, Vataria
11. Reva Sugar, Amod
12. Kamrej Sugar, Navipardi
13. Khedut Sugar, Pandvai
14. Narmada Sugar, Dhari Kheda
15. Valod Sugar, Dadria
16. Charotar Sugar, Petlad
17. Bileshwar Sugar, Kodinar
18. Una Sugar, Una
19. Talala Sugar, Talala
20. Kaveri Sugar, Chikli
21. Damanganaga Sugar, Daman, Vapai
22. Ukai Sugar, Gansada (Barditalisa)
23. Surat Sugar, Mandvi
24. Vadodara Sugar, Bodeli and
25. Silkhand Sugar, Silvasa

Out of these 26 units, twenty sugar units have been located in South Gujarat, three units are in Saurathra and three units in Central Gujarat. It is clear from the location pattern that majority (80%) sugar factories are located in Souther part of Gujarat and rest amount Central part and Saurathra. The parts of Gujarat State is still to thought for commencing sugar factories.

The first sugar unit set up in Gujarat was Khedut Sugar in Bardoli in 1954. Since than gradually in coming years, sugar factories were started. As stated earlier all the sugar factories set up in Gujarat were on co-operative basis.

If we consider capacities of each units,

<table>
<thead>
<tr>
<th>Sugar Factory</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khedut With</td>
<td>10000 TCD</td>
</tr>
<tr>
<td>Sahkari Sugar, Gandevi</td>
<td>5000 TCD</td>
</tr>
<tr>
<td>Madhi Sugar, Mdahi</td>
<td>7000 TCD</td>
</tr>
<tr>
<td>Chalthan Sugar, Chalthan</td>
<td>5000 TCD</td>
</tr>
<tr>
<td>Maroli Sugar, Maroli</td>
<td>2500 TCD</td>
</tr>
<tr>
<td>Valsad Sugar, Valsad</td>
<td>2500 TCD</td>
</tr>
<tr>
<td>Sayan Sugar, Sayan</td>
<td>5000 TCD</td>
</tr>
<tr>
<td>Mahuva Sugar, Bamnia (Karchelia)</td>
<td>3500 TCD</td>
</tr>
<tr>
<td>Ukai Sugar, Vyara</td>
<td>2500 TCD</td>
</tr>
<tr>
<td>Ganesh Sugar, Vataria</td>
<td>2500 TCD</td>
</tr>
<tr>
<td>Reva Sugar, Amod</td>
<td>2500 TCD</td>
</tr>
<tr>
<td>Kamrej Sugar, Navipardi</td>
<td>2500 TCD</td>
</tr>
<tr>
<td>Narmada Sugar, Dhari Kheda</td>
<td>2500 TCD</td>
</tr>
</tbody>
</table>
Valod Sugar, Dadria - 2500 TCD
Charotar Sugar, Petlad - 1250 TCD
Bileshwar Sugar, Kodinar - 3250 TCD
Una Sugar, Una - 1250 TCD
Talala Sugar, Talala - 1250 TCD
Kaveri Sugar, Chikli - 2500 TCD
Damanganaga Sugar, Daman, Vapai - 2500 TCD
Ukai Sugar, Gansada (Barditalisa) - 2500 TCD
Surat Sugar, Mandvi - 2500 TCD
Vadodara Sugar, Bodeli and - 2500 TCD
Silkhand Sugar, Silvasa - 2500 TCD

Khedut Sugar has the highest and Charotar, Una and Talala have the lowest TCD. Out of these twenty six units in Gujarat, presently, seven units do not function, and hence, from the study point of view, they are dropped. Now, out of remaining nineteen units, three units have been dropped because of the Government considers units as feasibly viable with a minimum of 2500 TCD and these units have 2500 TCD. Now, out of sixteen units, only one unit is located in Saurathra and the research could not get much response from it. Hence, that is not considered. As such fifteen units were to be decided and all were located in South Gujarat, six units were finally selected for the study purpose. They are:

Khedut Sugar, Madhi Sugar, Chalthan Sugar, Sayan Sugar, Gandevi Sugar and Ganesh Sugar. The total TCD of the selected units is 34500 which represents 42% of the total TCD of entire Gujarat State. The detailed analysis about the selected is discussed in Chapter IV.
3.33 RESEARCH DESIGN

The major varieties of research design, according to Labovitz and Hagedorn (1976) are case study, survey designs and experimental designs. The case study method (although technically not a design because it does not involve a comparison) involves the observation of one population or sample at one point at a time. The major purpose of this design is to describe the nature of the unit under study rather than to test hypotheses. For example, the cost study may involve the investigations of a large business enterprise, an urbanised area, or a community organisation. Suppose, it is found in the most of the business enterprise that most of the employees favour a wage investment plan in company stock. Suppose, further, that the company has just gone through an extensive advertisement campaign about the benefits of owning its stocks. Can we assume that the advertisement campaign was effective in making employees favourable disposed to investing in company stock? This type of question cannot be answered with a case study or survey at one point in time because (i) there is no way of knowing whether employees were favourably disposed before the advertising campaign and (ii) there is no control over other possible factors that may have influenced employee attitude on this issue.

In the present study, the prevalent practices of cost and pricing of sugar industry in Gujarat State and also examining the framed hypothesis, the case study research design is not an appropriate for the present research work. The present research work includes the descriptive type, analytical type and applied type research work. Hence, the present research work has to follow an admixture of two or more research designs may it be a case study or survey study or experimental research design. The researcher has liberty to adopt more than one research designs.

And, thus, present study will not only deviate from the fixed research designs
prescribed for but will follow an admixture of two or more research designs in the present investigation.

3.34 RESEARCH TOOLS

The research tools are usually used, adopted or constructed for obtaining the required information vary from one research study to another. In case of experimental studies, the research has to use standardised and sophisticated apparatus for making correct findings, whereas, in social researches such experiments are rarely conducted. Mostly, observational methods which include questionnaires, schedules, interviews, human observations, mechanical observations, physical trace evidences etc. are used in social science researches. However, many social science researches can not arrive at a meaningful or a desired conclusions unless secondary data which is usually available from Census Reports, vital statistics records, company files, sales receipt records, annual reports, prospectus of the company etc. are examined simultaneously. In the present context of the research it may be pointed out here that only primary data or secondary data obtained will not be suffice to make meaningful decisions. Hence, that following tools were used for obtaining the required information of the study.

3.35 QUESTIONNAIRES

PART - 1

The questionnaire, according to Myron (1972)\(^{(35)}\), is an instrument comprised of a series of questions that are filled in by the respondents themselves. It may be handed over to the respondents at work or it may be mailed at home. A mailed questionnaire is useful when respondents are scattered over a vast geographical area or when respondents are many and researcher has very limited resources. But this techniques of data collection by questionnaires is not recommended when study is being
conducted on small number of units. Especially when investigator approaches to respondents to establish rapport with them. In the present context, the questionnaire was constructed in four sections to collect information required for the study. The first section of the question related with the Introductory Information containing nineteen information seeking items was constructed to have a primary information regarding different sugar units studied. The secondary objective of this part has to establish rapport with the authorities of the concerned units. And, thus the first part as expected, served a vary good tool to get primary and secondary personal information and establishing the rapport with the authorities of the concerned units. This section is given in Appendix – I.

PART – II

The second part (as shown in Appendixes as Appendix – II) of the questionnaire deals with the accounting information includes costing and finance which contains twenty-three questions regarding the financial functions of the related units. All the questions of this questionnaire are in two category response system i.e. all the questions can be replied by putting a tick mark (sign which indicates right) under “yes” or “no”. Since all the information regarding the cost and pricing of the sugar units could not be covered under the head of this part, and also all the questions relating to the required information could not be worded for two category response system, other two parts of the questionnaire, as described now, were also developed.

PART – III

The third part of the questionnaire (as shown in Appendices as Appendix - III) was constructed in a multi-category-response system. It concerns with the chief inputs of
conversion cost (conversion cost means excluding the raw material cost from the factory cost) especially sugarcane and fuel costs. This part contains seventeen questions. All the questions of this part are multi-category response system. Some of the questions can be replied in "yes" or "no" and certain question can be replied in brief or by putting a word or figure and a few questions can be replied by a tick mark.

PART IV

The fourth and last part of the questionnaire, more or less an easy type pattern, was also constructed for obtaining that information which could not be covered under three previous parts of the questionnaire. This part relates with the pricing of the product viz., sugar, its policy of state, expected price by the manufacturer and other related issues of pricing of sugar have been asked.

Besides, there were three more statements constructed, out of three, two were developed and prepared as per the Cost Accounting Records (Sugar Industries) Rules, 1997. (Proformas - B and C) pertain to the cost of sugar (as shown in Appendices as Appendix – V) manufactured during the accounting period and the cost of sugar sold during the same period (as shown in the Appendix – VI). All the statements / schedules were devised for obtaining secondary information where as the former questionnaire consists of four parts was devised for obtaining primary as well as the secondary information. Thus the research tools used in all for conducting the present study were seven in number.

3.36 STANDARDISATION OF TOOLS

Standardisation of research tools is an essential as blood for a living human body. It includes reliability and validity and standard form administration and scoring. On this
account, investigator has to inform that all the research tools, as described earlier, were constructed on the basis of information contained in the annual reports, the information are to be required to furnish in the cost report of sugar and at the advice of a few senior researchers to make them quite objective. Further, the learned senior teacher who has supervised more than four M.Phil Students and is also a research guide of the investigator was repeatedly consulted for the final approval for these research tools. Questionnaire was tasted in one unit and then it was further revised and improved on the basis of this pilot study. And thus the research tools used for this research work can not be questioned easily as these were constructed on the basis of standardised patterns of research. Moreover, all questions asked in the tools are highly objective and standardised in response and in administration also.

3.37 PROCEDURE FOR DATA COLLECTION

Procedure for data collection was began by obtaining introductory letters from research supervisor. Because of this, it was easier for investigator to seek entry in the sugar industry and contact the concerned authorities. The formal discussion with the concerned authorities. The formal discussion with the concerned authorities such as, the Administrative officer, Gujarat Sugar Co-operative Federation, Gandhinagar established rapport – two most important part for seeking information and for conducting any research work. The letter of introduction, as mentioned above is appended under Appendices as Appendix – VIII and IX.

Investor has frequently visited the Federation office at Gandhinagar for discussing manufacturing processes, costing and pricing practise and other aspects and also contacted the concerned authorities of the selected units, and gathered relevant information and annual reports. Researcher also contacted All India Sugar Mills
Association, New Delhi, the libraries of the Institute of Rural Management (IRMA) Anand, The M. S. University of Baroda and of course Baikaka Library of Vallabh Vidhyanagar.

The officials of some sugar units were food enough to spare time for personal discussions and also provided copies of their Annual Reports whereas in some units user found to be rather reserved and were hesitated to part with and even to provide a copy of their annual reports Anyway, it is satisfying that, whatever the necessary data and information required could be taped with the co-operation of all who were contacted for this research work.

3.38 CLASSIFICATION, ANALYSIS AND INTERPRETATION OF DATA

The collected data were classified, analysed and presented in the concerned chapters. For the purpose of analysis of cost structure and its pattern over the period understudy, arithmetic average, weighted average, percentage distribution, ratios, comparison, break-even analysis etc. have been used.

3.39 PLAN FOR THESIS PRESENTATION

The present study has been divided into six chapters. First chapter focuses on the introducing and historical growth of the sugar industry. Second chapter discusses about contemporary issues related to cost and pricing of sugar. Third chapter comprises of the theoretical framework of the study and research methodology. Fourth chapter deals with the cost structure analysis of sugar factories. In fifth chapter, cost volume-profit analysis is made. Finally sixth chapter consists of findings and suggestions.
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