CHAPTER VI

AN ANALYSIS OF COST TRENDS

(a) REASONS FOR COST DIFFERENCE:

Number of factors are attributable for cost difference which are as follows:-

- Type of manufacturing process employed
- Age of the Plant
- Geographical location
- Capacity Utilisation
- Plant size

MANUFACTURING PROCESS

Manufacturing process of cement is three types. One is wet process, second is dry process and third is semi dry process. Those manufacturers who employed the wet process had costs above the weighted average level at 60% to 70%. Hence now in recent years dry process units were mostly established which played a very important part in reduction of manufacturing expenses.
Nowadays in cement units slag is also used in wet process system of Cement production but this did not much contributed in cost reduction. When slag is used in a good proportion in dry process manufacturing system, the unit cost comes down considerably.

AGE OF THE PLANT:

Among high cost units, about 70-75% units are more than 20 years old while 30% -25% units are less than 20 year.

Plant age is also one of the factor of increasing the cost. New plants are cheaper in cost of production as compared to old plant. Some of the units are undertaken scheduled maintenance and modernisation to keep the plant’s efficiency at peak level for containing their cost while others did not undertake such maintenance.
GEOGRAPHIC LOCATION

Geographical condition is also one of the factors of increasing cost of product. Unit which is near of the raw material (i.e. Lime Stone mines) that unit cost is lower as compared to those whose unit is far away from Lime Stone mines i.e. Tamil Nadu and Gujarat.

In Tamil Nadu and Gujarat we blend low grade lime stone with superior grade which escalated their cost. Unit of Bihar and Haryana also incur high cost to procure lime stone.

In these units they have to procure a good part of coal required from long distances. Hence landed price of Coal are high as compared to others.

CAPACITY UTILISATION:

Capacity utilisation exercises significant influence on production costs since fixed costs per unit output are inversely proportional to the volume of production.
Approx.50% units attained a capacity utilisation of over 90-100%. The manufacturing cost of 4/5 units were below average. On the other hand 50% of which was lower than 90-100%. To conclude that some units having satisfactory capacity utilisation had exceedingly manufacturing cost due to excessive expenses on inputs.

PLANT SIZE.

The production capacity of cement units differ widely ranging from less than one lakh tonnes to two/three million tonnes. Cost of production is very much related to plant size, Lower the Plant Size, maximum the cost and higher the plant size lower the cost.

COST COMPONENTS:

<table>
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<th>ITEMS</th>
<th>PER TONNE COST (RS)</th>
<th>PERCENTAGE TO TOTAL COST</th>
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<td>RAW MATERIAL</td>
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<tr>
<td>POWER</td>
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<td>27.29</td>
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<td>COAL</td>
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<td>30.34</td>
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<tr>
<td>STORES &amp; SPARS</td>
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A major element of cost in the manufacturing of cement is fuel and power accounting for 60% of total cost. Next importance in the cost is raw material which share approx. 10%. Thus raw material and power cost works out to 70%. The balance is accounted for administration and manufacturing overheads etc.

**FUEL & POWER**

Average expenditure in fuel and power is approx. 737/- Per Tonne i.e. 60% of cost of production. This is because of higher cost of coal and power.
Coal is also very important factor for determining the cost. Coal is mainly available from Central Coal field, Bharat Cooking Coal Ltd. Its mines are situated in Bihar and Bengal. Transportation of coal is very vital factor which increases the coal cost.

Coal received often in high moisture and ash content which considerably reduces the calorific value of coal and consequently raises coal consumption. Due to pilferage and other mal-practices in transit the units frequently received less quantity.

- Old kilns generally consumes more coal due to high heat losses.

Most important factor for the difference in inter-unit coal cost is the uneven burden of transportation charges. The unit disadvantageously located from the sources of coal supplies have to pay heavy freight as compared to those situated nearer to coal deposits.
The freight cost in coal is however on different footing. Higher freight cannot be set off against retention price formula i.e. fixed by CMA. The retention price recommended by the tariff commission, provision for transportation charges on coal was made on the basis of average transport lead of 975 Kms.

This formed the basis for granting price escalations arising out of an increase in the freight in coal in later years. If neutralisation of cost actually incurred in production of cement is the objective, the present system does not appear to be inequitable. In this system while some units are not able to recover costs actually incurred by them, while others who are located at proximate distances to coal sources are deriving an unintended profit. The units situated at far off distances from coal fields did not consider this disadvantage crippling due to availability of special concessional railway tariff on transportation of coal till March, 1977. After the withdrawal of concessional tariff on longer haulages, their fuel costs went up steeply.
(b) POWER:

Cement units consumes considerable quantities of electric power much of it at the stage of clinkerisation and grinding. The average consumption of power, per tonne of cement comes to 120 KWH. Rate of power has been increased in March, 97 by 26% over the previous year i.e. Rs.2.70 lacs to Rs.3.39 lacs per KWH resulting in increase of cement cost by Rs.82.80 per tonne. The tariff commission has taken an average norms -120 KWH of power is needed for production of one tonne of cement (25 MW for a Mil. tonne of cement).

The steep increase in power tariff in many of the states the share of power in fuel and power costs also increased. Reason for difference in cost is because of type of raw material available and manufacturing process adopted by them. When lime stone of a harder grade is available, power consumption at crushing stage before feeding to kiln and at grinding stage is bound to be higher compared to other units which have access to softer lime stone. Similarly power consumption in dry process unit is generally found to be higher compared to
a Wet process. The unit using slag in cement production are able to reduce their power consumption as their clinker to cement ratio is lower to the extent of slag use.

Another factor for difference in cost of power is power tariff charged by various states is different. The variation of cost is also depended upon quantity of power consumed.

(c) RAW MATERIAL:

Lime Stone:

Lime stone is the principal raw material required in the manufacture of cement or an average 1.5 to 1.55 tonne of lime stone is required for producing per tonne of cement. Gypsum though an essential ingredient, is however, used to the extent of 5%. Now-a-days blast furnace slag is also being used for inter grinding with
clinker. Some units also used bauxite, clay, Iron-ore etc. for purposes of blending to match the quality of lime stone used.

Now-a-days State Govt. imposes royalty on lime stone which directly increased its cost some of the other Govt. taxes paid like cess etc. which also inflate the costs.

Raising and transportation cost is also vital factor of determining the cost. The wide divergence in lime stone cost is due to following reasons:

- Some superior lime stone resources have exhausted and are compelled to use sub marginal grades which increases the cost.

- Some units do not have required quantity of lime stone and are processing higher grade from distant quarries for purpose of blending. The delivery price of such lime stone is generally higher.
In some cases lime stone mines are far away from plant site. In these cases transportation cost of lime stone are relatively high. The units which have mechanised mixing operation were able to bring down their cost of lime stone. Others do not enjoy this facility as certain lime stone deposit permit partial or no mechanisation. Certain units resorts to manual quarrying price of which is relatively high.

GYPSUM.

Gypsum is procured from mines of Rajasthan & Tamil Nadu. Some quantities are also available from salt works in Jam Nagar as by product of fertiliser unit. The transportation cost of Gypsum for some units are found to be much higher than the purchase price of gypsum. But quantitative requirement of gypsum is only 5% has not much more affected its costs.
SLAG:

Some units also used slag. The landed cost of slag is lower than the cost of production of clinker. The unit which are proximate to slag sources and have access to good quality of lime stone were able to bring down manufacturing cost substantially, other did not have such locational advantage could not achieve reduction in cost. Therefore, the economics of slag use will depend purely on the price at which it is made available and the charges one has to pay in its haulage.

(d) STORES & SPARES:

Cement unit consume a wide range of consumable stores and spares in the three stages of manufacturing viz. Lime Stone raising, clinkerisation and cement grinding.
Raising of Lime Stone from quarries required important stores are used as follows :-

- Explosives for blasting.
- Drilling materials
- Oils & Lubricants
- Spares and other stores.

At the clinkerisation the major items of stores and spares used are :-

- Fire Bricks
- Lining Plates
- Grinding Media
- Machinery Spares
- Miscellaneous Stores

At the cement grinding stage the following items are consumed :-

- Grinding Media
- Lining Plates
- Chemicals
- Spares and other stores.
Increase in the expenditure in this head is mainly because of steep rises in prices of stores and spares items:

Reason for variation of using components are dependent upon the following factors:

- The type of raw material available to a unit (lime stone) — The grinding media consumption is higher if Silica content in high on the lime stone
- Age of Plant
- Degree of mechanization in lime stone quarries.

(e) WAGES & SALARIES:

The highest increase was recorded in wages and salaries which rose 17% i.e. Rs.3390.30 in March, 1996 to Rs.3974.15 in March’97) per month. Leaving the impact of rise in cost of cement by Rs.29.20 Per Tonne
of Cement. These varied from unit to unit. Labour employment per tonne is larger in case of some units and consequently their labour costs are high. The units which are totally automatic reduces their labour and to that extent reduces cost.

(f) OVERHEADS:

Overhead expenses are indirect costs which cannot be computed to any process or stage of production. The main items coming under this category are:

- Factory over heads
- Administrative over heads
- Bonus to employees.
- Commission to managerial persons
- Interest

However, the increase of the expenditure in this head is mainly because of steep increase in the interest rates on their borrowing, taxes and levies.
The widening of the difference is due to varying rates of increase in manufacturing cost of unit -

Chief factor of the difference in costs are -

- Age of plant
- Productive capacity of the plant & its rate of utilisation
- Geographical location
- Manufacturing process adopted
- Variation in landed price of essential raw material & other inputs
- Quality of lime stone deposits exploited
- Employment per unit of output
- Quality of management

Now in this context very pertinent question arises that how to narrow down these differences? In manufacturing expenses of a unit, raw materials like (lime stone, Gypsum etc.) fuel and power, wages and salaries and stores and spares.
A major part of these expenses are exogenously determined like wages and salaries, power, coal tariff and its transportation charges. Locational factors also have considerable influence on costs.

Some of the corrective measures can be taken for reducing the cost like Fuel costs of some units reduced by minimising heat losses. Overhead expenses of some of units were also found to be excessive. Better cost control measures, it makes perhaps, be possible to reduce manufacturing expenses. Some of the units already taken corrective measures to reduce costs by adopting more efficient cost reduction use of cheaper makes reduces coal consumption, increase the rate per unit of power consumption.

(g) DEPRECIATION:

Depreciation in notational item of cost which do not out flow of the cost. This adjustment is made only against wear and tear of plant and machinery of efflux of time. Generally two methods are followed—first is
straight line method and other is written down value method. In case of first a fixed amount of depreciation is charged in whole life of plant. Plant life is determined according to the rate as per Companies Act. However in case of written down value method depreciation are charged on percentage basis determined as per Companies Act, Income Tax Act.

In the Written Down Value Method (WDV) depreciation amount is higher in initial year and declining year to year basis. However in the Straight Line Method we charge the depreciation equally in whole life of the Assets which is determined as per Prevailing Act.

The amount of depreciation charged in Profit and Loss Account and the same creates the reserve which is used for modernisation and replacement of Plant and Machinery.
(h) NON-AVAILABILITY OF RAIL HEAD

Cement is stored in loose form in the silos at the Cement Plant, the capacity of silos is generally 12 - 15 days production. Cement is bagged in the packing Plant just before despatch by Rail or Road. Once the limit of Road despatch is exhausted, the production is entirely dependent on Rail Transportation, any short fall in supply of Wagons results in cutback in cement production.

* Limitation of Road despatch can be due to:

1. Non-availability of adequate Trucks in the Area.
2. Limitation of Truck Loading facilities in the given Plant.
3. Non-availability of further market of cement within reasonable distance.

Loss of Cement Production after optimising Road Movement on account of shortage of wagons has fluctuated widely from year to year, during 1976 and 1983, there was practically no Loss. The all India total indents placed by Million Tonnes capacity Plants for Wagons showed that
70% production was planned to be moved by Rail and Plants in dusters showed about 80% planned Rail Movement.

**PROBLEMS IN RAIL TRANSPORT**

More and more cement related traffic is going to Road sector due to certain problems relating to Rail Transport, the important ones are :-

1. Inadequate Wagon Supply.

2. Delay at Terminals in loading and Unloading due to inadequate mechanised means.

3. Line capacity constraints on many Railway Routes, resulting in Poor Wagon turn round.

The average lead of cement movement from plants to the consumption centres is about 650 Kms. in certain cases, cement moves over distances more than 1000 Kms. On an average, the transport costs of cement accounts for about 10% of the sale price as against a lower figure in many countries.
Road Transport is costlier than Rail Transport, further, Road Transport is ideal for short distances only. The present trend of shifting more and more cement related traffic to the Roads needs to be checked.

INITIATIVES TOWARDS EFFICIENT SOLUTIONS -

In order to improve the situation and to ensure healthy growth of the Industry, a number of initiatives have been under active consideration, both by the Government and the Industry these include the following:-

1. Railway's Own Your Wagon Scheme (OYW) Scheme.
2. Closed Circuit Rake Movement.
4. Improvement of the Loading/Unloading facilities at Rail Terminals and Cement Plants, using mechanical equipments.
5. Improvement of Loading/Unloading handling and other related facilities at the ports.
6. Improvement of Road infrastructure by construction of Long Lasting Low Maintenance and Fuel Saving Concrete Roads.