CHAPTER 3

Processing and cost of Production of Groundnut Oil
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PROCESSING AND COST OF PRODUCTION OF GROUNDNUT OIL

Processing is an important marketing function in the present day marketing of agricultural commodities. A little more than 100 years ago, it was relatively unimportant function in marketing. Many technological changes have occurred in the recent past which have a great impact on the standard of living of the consumers. Processing involves a change in the form of the commodity. It converts farm products into a more usable form.

A study of production is important in the sense, it gives an insight into effective utilisation of productive resources of the economy. Production means creation of utility. It is normally conceived as conversion of source into resource and factors into products. It results in an overall transformation of materials into manufacture of commodities. Not only the form of inputs is changed in the process of production but utilities, space and time, are created through storage and transportation. Thus, production implies not only the manufacture of physical products but also services.

PROCESSING OF GROUNDNUT: Groundnut contains oil and cake. The following methods are generally used in processing oilseeds.
1. **Bullock-driven Ghani Method:**

   Ghani is a traditional method of oilseeds processing. A ghani consists of a wooden vessel in which oil is collected and which is attached to a wooden log rotated by a single bullock. The quantity of oilseeds to be processed at a time is about 10 Kg. and the process takes about 2 hours. The oil and cake extracted by this method are of better quality than those extracted by other methods.

2. **Power Driven Ghani Method:**

   This is similar to the traditional bullock-driven ghani except that, here, electric power instead of bullock, is used to rotate the ghani. The process takes less time. The quantity of oilseeds processed per day is greater than that processed by the bullock-driven method.

3. **Expeller Method:**

   This method has become very popular and is generally used now-a-days. Expellers of different sizes are utilised. The capacity and time taken by each expeller vary with its size. The oil recovery percentage is higher in this method than through ghani method. The cost of processing per quintal of groundnut shell ranges between Rs.20.50 through a 6 bolt expeller and Rs.15.50 through a 9 bolt expeller.
(4. Solvent Extraction Method:)

By the above three methods, 5 to 7% oil is left in the cake. To remove this extra quantity of oil, the solvent extraction method is used. The oil cake which is the raw material for this method is transferred to the extractor through incoming conveyer. This oil cake is treated with food grade hexane and heated by steam to dissolve the oil presented in it. The oil with hexane is transferred to recuperator section which separates oil and hexane. Again, the oil is transferred tomiscesela for further processing, from where it is then transferred to storage tank. By-product of deoiled cake from extractor is transferred to toaster and remaining hexane vapour is separated. The hexane vapour from toaster is sent to cooling condenser and transformed to a liquid form. This oil is taken in the neutralised form and treated with caustic soda solution. The quantity of caustic soda solution depends upon the fatty acid contents of the oil. (Treating of oil with caustic soda solution is known as neutralisation).

The neutralised oil is allowed in soap setting for four hours and given two to three water wash. This oil is then transferred to the bleacher after drying under vacuum, is bleached by adding activated carbon. This oil is then, filtered through
filter press to remove the chemicals. This bleached oil is then taken to the deodiser where it is heated under vacuum for about six to seven hours, by which process the odour is completely removed. This oil is cooled and filtered and then sent to the filling section to be filled in drums or tins as the case may be.

Irrespective of the method of extraction, all units obtain their raw materials at an uniform price at Rs.900/- per metric ton. This raw material is in the form of kernal which has to be crushed into oil. This leads to an analysis of conversion cost which includes labour charges, power and depreciation. The cost of conversion varies from process to process. For instance, in bullock-driven ghani method the crushing cost comes to Rs.35/- per metric tonne. Under Electric Driven Ghani method, the cost is calculated to be Rs.24/- per metric ton. The cost of conversion in the Rotary method is Rs.31.25/- per metric ton. The cost of conversion is the highest in bullock-driven ghani method because the labour cost and the time involved in the conversion process of kernal into oil is high in the first method, when compared to the other two. Hence, the high labour cost leads to high conversion cost in this method.
OIL AND CAKE PRODUCTION IN DIFFERENT METHODS

- **BULLOCK DRIVEN**
- **POWER DRIVEN**
- **ROTARY**
- **EXPPELLER**

Legend:
- OIL
- CAKE
- LOSS
Out of 100 Kg. kernel crushed, the production of oil varies under different methods.

### TABLE 3.1 OIL AND CAKE PRODUCTION IN DIFFERENT METHODS

<table>
<thead>
<tr>
<th>Method</th>
<th>Oil Production in Kgs.</th>
<th>Cake Production in Kgs.</th>
<th>Normal Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullock-Driven</td>
<td>33</td>
<td>64</td>
<td>3%</td>
</tr>
<tr>
<td>Power Driven</td>
<td>37</td>
<td>61</td>
<td>2%</td>
</tr>
<tr>
<td>Rotary</td>
<td>37</td>
<td>62</td>
<td>2%</td>
</tr>
<tr>
<td>Expeller</td>
<td>38</td>
<td>61</td>
<td>1%</td>
</tr>
</tbody>
</table>

(Source: Primary)

Since the study is confined to Salem District, the major oil producing taluks, Salem, Tiruchengodu, and Namakkal are selected for study.

The table 3.2 shows the taluk wise and processwise distribution of oil mills in Salem District.

### TABLE 3.2 TALUK-WISE & PROCESS-WISE DISTRIBUTION OF OIL MILLS IN SALEM DISTRICT.

<table>
<thead>
<tr>
<th>Taluks</th>
<th>Country Chekku</th>
<th>Power Driven</th>
<th>Rotary</th>
<th>Expeller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salem</td>
<td>5</td>
<td>6</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Tiruchengodu</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Namakkal</td>
<td>7</td>
<td>6</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>

(Source: Primary)
TALUKWISE AND PROCESSWISE DISTRIBUTION OF OIL MILLS IN SALEM DISTRICT

SALEM
TIRUCHENGODE
NAMAKKAL

COUNTRY CHEKKI
POWER DRIVEN
ROTARY
EXPELLER
The table 3.2 reveals that 90% of the groundnut oil is produced only through the expeller. Though the number of Rotary is also large, most of them are not functioning because they have shifted to gingely and other vegetable oil production. Only few of them are engaged in groundnut crushing.

Apart from the above methods of oil extraction, there is also solvent extraction of oil. In Tamil Nadu, there are 24 mills undertaking the process of extracting oil from oil cake. Of the 24 Units, two are functioning in the study area one in Salem Taluk and the other in Namakkal Taluk.

The crushing capacity of this unit, located in Omalur is 50 tonnes of oil cake per day. It is working 3 shifts, producing 300 kg. of groundnut oil per day. The raw material for this unit, that is oil cake, is obtained from Tiruvannamalai. The oil obtained from this method cannot be used directly for consumption. It should be refined and this is also undertaken by the same oil mill and sold under the name of "Rajabrand" refined oil.

COST STRUCTURE

The economic viability or otherwise of an industrial unit is largely determined by its cost structure. Cost structure includes the various components of fixed and variable costs.
The cost structure analysis enables the entrepreneurs to adhere to the ideology of rationalisation, one of the concepts given by Taylor in his analysis on scientific management. Rationalisation helps the entrepreneur in putting reasons into industry to render it more competitive. This in turn helps the unit to become self-sufficient.

In this section, it is proposed to study the cost structure of the Groundnut oil industry in Salem District, with the main focus on the relative importance of various cost elements. The groundnut oil industries, by and large, do not show any awareness of the advantages of proper maintenance of records. Detailed accounts of income and expenditure are conspicuous by their absence. Therefore, the researcher is constrained to workout the accurate cost for all the years.

Elements of Cost:

The cost structure of the Groundnut oil industry is examined under two broad categories—fixed cost and variable cost.

Fixed Costs:

Norman Thornton defined fixed costs as "costs unaffected by a change in the level of activity and which tend to vary with time or when there is a substantial change in the financial policy" 5

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5 Norman Thornton, Management Accounting, page 32, Allied Publishers Private Ltd.
"Fixed Costs", according to J. Batty, "are those costs which tend to remain the same in total irrespective of the volume of output".  

Manmohan and S.N.Goyal opine that "fixed costs include conventional items, such as, depreciation, property insurance and real estate taxes". 

William J. Stanton views, "fixed cost is an element, such as rent, salaries, or property tax, that remains constant regardless of how many items are produced. Such a cost continues even if production stops completely. It is called fixed cost because it is difficult to change in the short run. Total fixed cost is the sum of all fixed costs". In this study, the various components of fixed cost are (a) depreciation of machinery and building, (b) rent, (c) insurance, (d) interest on fixed capital.

Variable Costs:

"Costs which vary in direct proportion to changes in the level of activity". 

"Any expense expected to increase with a rise in production and decrease with a reduction in production". 10

In this study variable costs include cost of raw material, Transport cost, Labour charges, interest on working capital, Taxes.

Variable cost is thus, defined as an element, such as labour or material costs, that is directly related to production. Variable costs can be simply controlled in the short run, simply by changing the level of production. When production stops, for example, all variable costs become zero. Thus, the total cost of groundnut oil production comprises of fixed and variable costs.

An overall picture of the structure of cost is presented in Table 3.3.

<table>
<thead>
<tr>
<th>TABLE 3.3. COST OF PRODUCTION OF GROUNDNUT OIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td><strong>Fixed Cost</strong></td>
</tr>
<tr>
<td>Depreciation</td>
</tr>
<tr>
<td>Insurance</td>
</tr>
<tr>
<td>Interest on fixed capital</td>
</tr>
<tr>
<td><strong>Variable Cost:</strong></td>
</tr>
<tr>
<td>Cost of raw material (262Kg Groundnut)</td>
</tr>
<tr>
<td>Transport cost</td>
</tr>
<tr>
<td>Labour Charges</td>
</tr>
<tr>
<td>Reapir and Maintainence</td>
</tr>
<tr>
<td>Taxes on Groundnut</td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Cost of Production per kg. Rs.22.52 (Expeller)

10. William J. Stanton Op-cit; P.238
FIXED COST
COST OF PRODUCTION OF 1KG OF GROUNDNUT OIL

- INTEREST
- DEPRECIATION
- INSURANCE
COST OF PRODUCTION OF 1 KG OF GROUNDNUT OIL

VARIABLE COST

- COST OF RAW MATERIAL
- TRANSPORT
- LABOUR
- REPAIR
- TAXES
Fixed Cost:

Depreciation, in economic literature denotes, capital consumption allowance. The fixed asset of an industrial unit, when operated continuously may lead to physical deterioration. Therefore, they are to be replaced. Depreciation is a recurring phenomenon and certain amount is to be set aside to do away with their wear and tear. Depreciation cost represents cost element regarding apportionment of the cost of replacement of machinery as and when needed.

It is interesting to observe from the field investigation that all the rotary and expeller units have a uniform rate of depreciation i.e. 0.08 per cent. The table shows that depreciation constitutes a small portion of the total cost. The depreciation cost is positively correlated with the amount of fixed capital.

Rent:

Another aspect of total cost is rent. Rent has not been imputed for owned buildings because depreciation has already been calculated on such buildings. Rent is not an element of cost in all the industries because in the study area all factory buildings are owned by the proprietors themselves.
Insurance:

In the present day economy, current production is based on expectations. Production takes place in anticipation of future demand. This naturally gives scope for risk and uncertainties. It is against such risks and uncertainties, industrial units are to be insured. Insurance premia represent cost of such insurance and are generally paid for coverage of risks and uncertainties involved right from the purchase of raw materials till the sale of products. Field investigation reveals that premium constitutes a less percentage of total cost. The percentage of insurance to total cost is 0.04.

Interest:

Interest also constitutes a portion of fixed cost of production. Interest has been imputed on capital invested by the owners in the calculation of cost. It is found from the table that the interest imputed for own funds constitutes a small percentage to the total cost. It works to 0.26 per cent of the total cost.

Variable Cost:

Evaluation of variable cost is yet another dimension of the analysis. It includes expenditure on raw materials, trans-
port, labour charges, taxes and interest on working capital. An analysis was made to show the relative importance of different elements of variable cost in the groundnut oil industry.

Raw Materials:

The basic raw-materials constitutes the most important element in the cost structure in all the units. The percentage of raw-material to total cost is the highest amounting to 92.32 per cent.

Wages:

Wages represent payment made to the labourers. This forms an important item in the computation of the total cost. Payments made to the permanent staff are in the nature of fixed cost. In the study units, wages and salaries constitute a small percentage to total cost. It is just a fraction of the total cost due to the fact that lack of raw material is the main hindrance in generating additional employment for the labourers. Further, the work in the industry does not require much of skill and dexterity, justifying lower wages as compared to other industries.

Another important feature of the industry is that in all the units covered under investigation, there were absolutely no family labourers engaged in production. The owners of
the factory are themselves the Directors and their salaries are included in the cost structure.

**Transport:**

Transport as nerves of the economy, helps in the movement of goods and services. The units get the groundnut either directly from the farmers or from the Regulated Markets nearby. It is found from the table 3.3 that the cost involved on transport is 1.7% of the total cost of the study units.

**Repair and Maintainence:**

The maintainence of fixed assets like plant and machinery, is a very important function of management. Machines cannot be taken for granted. They also get tired and wornout and hence, demand periodic attention. Sometimes, the need for production is so urgent, the need for maintainence is completely overlooked. Poor maintainence of machinery results in loss of life. Although it may not be reflected in the immediate net earning of the unit, in the ultimate analysis, it is bound to affect the economic operation of the concern. At one time, maintainence was synonymous with breakdown, repairs, and wear and tear. Today the value of preventive maintainence has been increasingly recognised. It is found from the table 3.3 that repair and maintainence charges constitute a small portion of the cost of different oil units.
The repair and maintenance costs amount to 0.31 per cent of the total cost.

Such low percentage of repair and maintenance in the cost of structure of the oil industry points to inadequate attention being paid by most of the units to proper maintenance of their plants and equipments. In the ultimate analysis, all said and done, machines are to be cared for, if earnings are to be increased.

Sales tax on groundnut constitutes a large proportion in the total cost. It amounts to 4.50 per cent of the total cost. As long as the duties are shiftable the incidence is to be on the final consumer.

An analysis of the structure of variable cost in different oil industries shows that cost of raw material dominates among the various elements of cost in all the units.