



**Original Article**

**A STUDY OF PRODUCTION PROCESS IN OIL INDUSTRY**

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**Abstract:**

*The oil industry plays a crucial role in the agro-based industrial sector by converting oilseeds into edible oils and valuable by-products. The present study focuses on analyzing the production process involved in oil extraction, cost structure, machinery efficiency, capacity utilization, and quality control practices in small and medium oil mills. The research adopts a descriptive design using both primary and secondary data sources. The findings indicate that raw material cost forms the major portion of production cost, and efficient extraction methods significantly affect profitability. The study concludes that modernization of machinery, better resource management, and improved quality control measures are essential for sustainable growth in the oil industry.*

**Keywords:** Oil Industry, Oil Extraction, Production Process, Edible Oil

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**Introduction:**

The oil industry is one of the most important agro-based industries in India and across the world. It plays a vital role in processing oilseeds such as groundnut, soybean, sunflower, mustard, and cottonseed into edible oils for daily consumption. Edible oil is an essential commodity used in every household, food processing unit, and hospitality

sector. Therefore, the efficiency and productivity of oil manufacturing units directly influence food supply and economic stability.

The production process in the oil industry involves several systematic stages including procurement of raw materials, cleaning and grading of seeds, crushing, oil extraction, filtration, refining, packaging, and distribution. Each stage requires



proper planning, machinery, skilled labour, and quality control measures to ensure maximum yield and minimum wastage. Small and medium-scale oil mills contribute significantly to rural employment and agricultural income. They support farmers by purchasing oilseeds and converting them into marketable products. Along with edible oil, by-products such as oil cake are produced, which are used as cattle feed or organic fertilizer, thereby increasing overall profitability.

In today's competitive environment, oil mills face challenges such as fluctuating raw material prices, high electricity costs, technological advancements, and strict quality standards. Therefore, studying the production process and operational efficiency of the oil industry is essential to identify areas for improvement and ensure sustainable growth. This research focuses on understanding the production process, cost structure, machinery utilization, and quality control practices in the oil industry.

#### **Objectives of the Study:**

1. To study the overall production process in the oil industry.
2. To understand different methods of oil extraction.
3. To examine machinery efficiency and capacity utilization.
4. To analyse the cost structure of oil production.
5. To evaluate quality control measures adopted in oil mills

#### **Statement of the Problem:**

Small and medium oil mills face challenges such as fluctuating raw material prices, outdated machinery, high electricity costs, and competition from large-scale industries. Inefficient production systems may lead to higher wastage and reduced profit margins. Therefore, it is important to study

the production process and identify ways to improve efficiency and cost control.

#### **Scope of the Study**

The present study focuses on general oil manufacturing units and their overall functioning. It examines various stages of the production process, major cost components involved in oil production, and the level of operational efficiency. The study also includes an analysis of by-products such as oil cake and their contribution to revenue, along with the sales and distribution system of the finished products.

#### **Limitations of the Study**

The present study is limited to selected oil manufacturing units, and therefore the findings may not represent the entire oil industry. The data collected is mainly based on information provided by management and workers, which may include personal opinions and may not always reflect complete accuracy. Additionally, time and financial constraints restricted the scope of the research, limiting the possibility of conducting detailed statistical analysis and covering a larger sample size..

#### **Significance of the Study:**

The study provides practical insights into oil processing operations. It helps understand cost management, production efficiency, and quality standards. The research is useful for students, entrepreneurs, and small-scale industrial units.

#### **Review of Literature:**

The review of literature provides an overview of previous studies related to the production process, cost structure, and operational efficiency in the oil industry.

Bansal (2019) studied agro-based industries in India and highlighted the importance of oil processing units in rural development. The study



emphasized that modernization of machinery improves productivity and reduces wastage.

Kachru (2018) examined agro-processing industries and explained that proper cleaning, grading, and storage of oilseeds significantly increase oil recovery and quality. The study also pointed out the need for scientific storage methods.

Sharma and Singh (2020) analyzed production efficiency in small-scale oil mills and found that most units operate below full capacity due to irregular raw material supply and power shortages.

Singh (2019) focused on edible oil processing and quality control practices. The research concluded that advanced refining and testing facilities are essential to meet food safety standards.

Verma (2022) studied capacity utilization in oil manufacturing units and observed that better planning and modern technology enhance operational efficiency and profitability.

### **Research Methodology:**

**Research Design:** The present study is based on a **descriptive research design**. Descriptive research helps in describing the existing production process, operational system, cost structure, and quality control practices in the oil industry. It focuses on observing and analysing real situations without manipulating variables.

**Nature of the Study:** The study is analytical as well as observational in nature. It examines the practical functioning of oil manufacturing units and evaluates their efficiency and performance.

### **Sources of Data**

- **Primary Data:** Interviews with oil mill operators and workers.
- **Secondary Data:** Books, research articles and industry publications.

**Sample Size:** Sample size refers to the number of respondents or units selected for the purpose of data

collection in a research study. In the present study, the sample size consists of **50 respondents** related to the oil industry. The respondents include Oil mill owners, Managers, Machine operators, Workers involved in production activities. The sample was selected using the convenience sampling method, based on accessibility and availability of respondents.

### **Production Process in Oil Industry:**

The oil extraction process involves the following detailed stages:

- 1. Procurement of Oilseeds:** The first stage involves purchasing good quality oilseeds such as groundnut, soybean, sunflower, mustard, and cottonseed from farmers or traders. Proper selection of seeds is essential because moisture content, size, and purity directly affect oil yield. The seeds are stored in dry and ventilated warehouses to prevent spoilage and fungal growth.
- 2. Cleaning and Grading:** In this stage, impurities such as dust, stones, sand, damaged seeds, and metal particles are removed using cleaning machines, sieves, blowers, and magnetic separators. Cleaning improves the efficiency of the extraction process and protects machinery from damage. Grading ensures uniform seed size for better processing.
- 3. Crushing / Grinding:** The cleaned seeds are crushed or ground into smaller particles using crushers or grinders. This process increases the surface area of seeds, making oil extraction easier and more effective. Sometimes, seeds are heated slightly to improve oil recovery.
- 4. Oil Extraction:** Oil extraction is carried out using two main methods:
  - **Mechanical Method (Oil Expeller):** Pressure is applied through an expeller machine to squeeze out oil. This method is commonly used in small and medium-scale units.



- **Solvent Extraction Method:** Chemical solvents (like hexane) are used to extract maximum oil from crushed seeds. This method is mainly used in large-scale industries for higher efficiency.

**5. Filtration and Refining:** The crude oil obtained contains impurities, unwanted color, odor, and free fatty acids. It undergoes filtration and refining processes such as degumming, neutralization, bleaching, and deodorization to improve quality, taste, and shelf life.

**6. Packaging and Storage:** After refining, the oil is packed in bottles, tins, or pouches using automatic filling machines. Proper sealing and labeling are done to ensure hygiene and prevent contamination.

The finished product is stored in clean and cool warehouses before distribution.

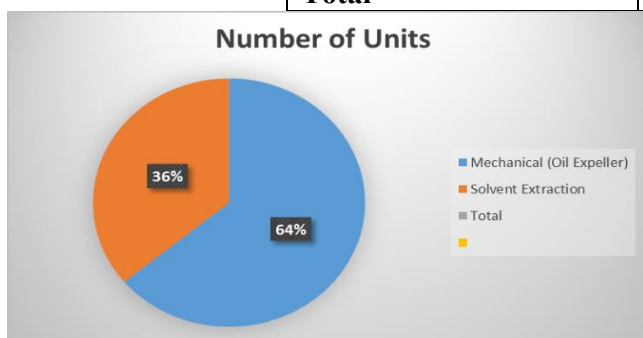
**7. By-Products:** The solid residue left after extraction, known as oil cake, is used as cattle feed or organic fertilizer. It provides an additional source of income and ensures complete utilization of raw materials.

#### Data Analysis and Interpretation

The data collected from 50 respondents (oil mill owners, managers, machine operators, and workers) was analyzed using percentage method and tabular presentation to understand production efficiency, cost structure, and quality control practices in the oil industry.

Table 1: Type of Oil Extraction Method Used

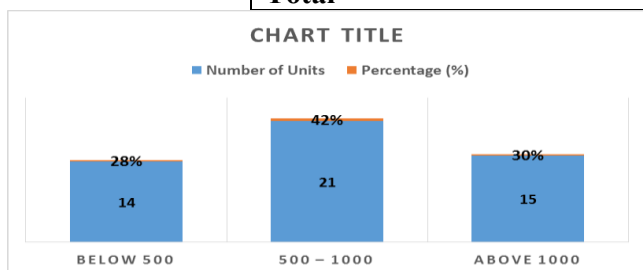
Extraction Method	Number of Units	Percentage (%)
Mechanical (Oil Expeller)	32	64%
Solvent Extraction	18	36%
<b>Total</b>	<b>50</b>	<b>100%</b>



The data shows that 64% of oil mills use the mechanical (oil expeller) method. This method is preferred because it requires lower investment and is easy to operate. It is suitable for small and medium-scale units. Only 36% use the solvent extraction method due to higher installation and operational costs. This indicates limited adoption of advanced technology in smaller industries.

Table 2: Monthly Raw Material Consumption

Raw Material Used (Quintals)	Number of Units	Percentage (%)
Below 500	14	28%
500 – 1000	21	42%
Above 1000	15	30%
<b>Total</b>	<b>50</b>	<b>100%</b>



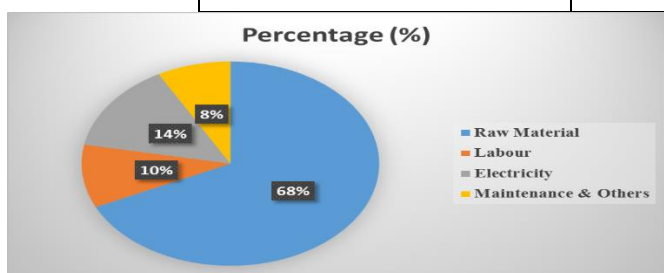
production capacity. About 30% of units process above 1000 quintals, showing larger operational size. Meanwhile, 28% process below 500 quintals, representing small-scale mills. Production capacity varies depending on capital, machinery, and market demand. This shows a mix of small and medium units in the industry.

The majority of units (42%) process 500–1000 quintals per month, indicating moderate



Table 3: Major Cost Component in Production

Cost Component	Number of Responses	Percentage (%)
Raw Material	34	68%
Labour	5	10%
Electricity	7	14%
Maintenance & Others	4	8%

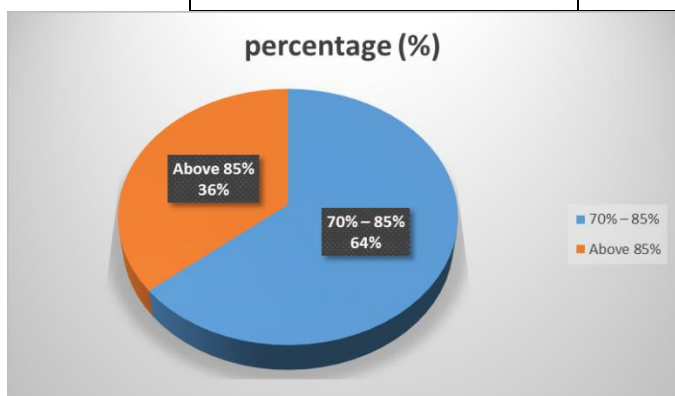


Raw material cost (68%) is the highest expense in oil production. This shows that profitability mainly depends on oilseed prices. Electricity cost (14%) is the next significant expense due to machine usage. Labour (10%) and maintenance (8%) are comparatively lower. Effective procurement and

price control are essential to reduce overall cost. Fluctuation in seed prices directly affects profit margins.

Table 4: Capacity Utilization Level

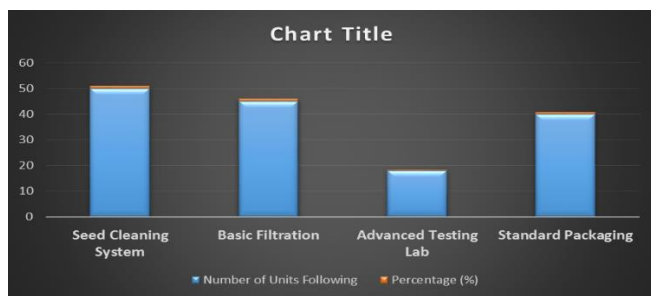
Capacity Utilization	Number of Units	Percentage (%)
Below 70%	9	18%
70% – 85%	32	64%
Above 85%	18	36%
<b>Total</b>	<b>50</b>	<b>100%</b>



Most units operate between 70–85% capacity, indicating moderate efficiency. Some units operate above 85%, showing better performance and stable operations. A few units work below 70%, which may be due to power shortages or raw material issues. There is scope to improve utilization without major additional investment. Better planning can increase overall productivity.

Table 5: Quality Control Practices Adopted

Quality Measure	Number of Units Following	Percentage (%)
Seed Cleaning System	50	100%
Basic Filtration	45	90%
Advanced Testing Lab	18	36%
Standard Packaging	40	80%



All units follow seed cleaning systems (100%), ensuring basic quality standards. Most units (90%) use basic filtration processes. However, only 36% have advanced testing laboratories. About 80% follow standard packaging systems. This shows that while basic quality measures are adopted, modernization in testing and refining is still needed for better competitiveness.

#### Findings:

1. The majority of oil mills use the mechanical (oil expeller) method due to low investment and easy operation.
2. Most units operate at a moderate production level (500–1000 quintals per month).
3. Raw material cost is the major component of total production cost, significantly affecting profitability.
4. Capacity utilization is generally between 70–85%, showing moderate efficiency.
5. Basic quality control practices are followed, but advanced testing facilities are limited in many units.
6. By-products like oil cake contribute additional income to the oil mills.

#### Suggestions:

1. Oil mills should adopt modern and energy-efficient machinery to improve productivity.
2. Proper planning and bulk purchasing of oilseeds can help reduce raw material cost.

3. Capacity utilization should be improved through better production scheduling and maintenance.
4. Advanced quality testing and refining systems should be installed to enhance product quality.
5. Units should focus on branding, packaging, and marketing strategies to increase competitiveness.
6. Training programs for workers can improve operational efficiency and reduce wastage.

#### Conclusion:

The study concludes that the oil industry plays a vital role in the agro-based industrial sector by converting oilseeds into edible oil and valuable by-products. Most oil mills rely on the mechanical extraction method due to lower investment and easy operation. Raw material cost is the major component of production cost, directly influencing profitability. Although capacity utilization is moderate, there is scope for improving efficiency and productivity. Basic quality control practices are followed, but modernization and advanced testing facilities are still limited. Therefore, technological upgradation, better cost management, and improved quality standards are essential for the sustainable growth and competitiveness of the oil industry.

#### References:

1. Bansal, R. (2019). *Agro-based industries in India*. Tata McGraw-Hill Education.
2. Food and Agriculture Organization. (2022). *Oilseeds and oil production statistics report*. FAO Publications.
3. Government of India, Ministry of Food Processing Industries. (2023). *Annual report 2022–23*. Government of India.



4. Kachru, R. P. (2018). *Agro-processing industries in India*. CBS Publishers & Distributors.
5. Maheshwari, S. N., & Maheshwari, S. K. (2020). *Cost accounting: Theory and problems*. Sultan Chand & Sons.
6. Pandey, I. M. (2021). *Financial management* (12th ed.). Vikas Publishing House.
7. Sharma, S., & Singh, B. (2020). Production efficiency in small-scale oil mills in India. *International Journal of Agricultural Economics*, 5(3), 45–52.
8. Singh, R. (2019). Edible oil processing and quality control practices. *Journal of Food Processing and Technology*, 10(4), 112–118.
9. Tiwari, A. (2021). Cost structure analysis of agro-based industries. *Indian Journal of Commerce and Management Studies*, 12(2), 67–74.
10. Verma, P. (2022). Capacity utilization and productivity in oil manufacturing units. *International Journal of Industrial Engineering Research*, 8(1), 21–29.