

Economic analysis of establishment cost and returns of a soybean oil processing unit in Buldhana District of Maharashtra

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Abstract

The soybean processing industry plays an important role in the agricultural economy by converting soybean into edible oil and other commercially valuable products. The present study was undertaken to examine the establishment cost and economic performance of Vinayak Gold Oil Pvt. Ltd., Chikhli, in Buldhana district of Maharashtra. The study was based primarily on field-level information collected from the processing unit for the agricultural year 2025–26. The first objective was to estimate the establishment cost of the processing unit, while the second objective was to analyse the cost and returns associated with soybean oil production. The establishment cost of the unit was estimated at ₹1,42,65,000. Solvent extraction plant and machinery represented the major share of the investment, followed by the boiler and land and building. During the study period, the unit recorded an annual gross income of ₹56,67,01,950 against a total cost of ₹45,90,90,351. Variable cost accounted for the major portion of total cost, amounting to ₹45,48,01,087, while fixed cost was ₹42,89,264. The resulting net return was ₹10,76,11,599. The benefit-cost ratio was estimated at 1.23, indicating that the processing activity was economically viable during the study period. The findings demonstrate that efficient utilization of processing capacity, cost management and investment in appropriate processing infrastructure are important for maintaining profitability in soybean oil processing enterprises.

Keywords: Soybean oil, processing unit, establishment cost, cost of production, gross income, net return, benefit-cost ratio, agribusiness

Introduction

Agriculture and allied activities constitute an important component of the Indian economy, while agroprocessing provides an essential link between agricultural production and the consumer market. Processing activities increase the economic value of agricultural commodities, generate employment and create opportunities for agribusiness enterprises. Among oilseed crops, soybean occupies an important position because it serves as a major source of edible oil as well as oilseed meal used in livestock and poultry feed.

India has a large edible-oil demand, while domestic production remains insufficient to meet total consumption requirements. According to the Indian Council of Agricultural Research, India has historically depended substantially on imports to bridge the gap between domestic edible-oil production and consumption. Soybean is one of the major edible oilseed crops contributing to India's vegetable-oil economy.

The soybean processing sector is therefore important not only for value addition but also for strengthening the domestic edible-oil supply chain. Processing enterprises create value by transforming soybean into oil and other useful products and by-products. ICAR has also highlighted soybean processing as an avenue for entrepreneurship, employment generation and income creation.

Maharashtra is one of the important soybean-growing states of India, and the crop has considerable significance in the agricultural economy of the Vidarbha and Marathwada regions. The availability of soybean as a raw material creates opportunities for processing and value addition within the state. Recent ICAR initiatives have also emphasized the importance of improving soybean productivity and strengthening soybean-based value chains. The economic performance of a processing enterprise depends on both the initial investment required for establishing the unit and the recurring cost involved in processing. A study of establishment cost helps to understand the capital requirement and investment pattern of the enterprise. Similarly, analysis of cost and returns provides an indication of the financial viability and profitability of the processing activity.

Vinayak Gold Oil Pvt. Ltd., located at Chikhli in Buldhana district of Maharashtra, is a soybean processing enterprise engaged in the production of soybean oil. The enterprise was selected for the present study to examine its establishment investment and economic performance. The study is particularly relevant because systematic economic analysis at the enterprise level can help entrepreneurs, investors, policymakers and other stakeholders understand the financial requirements and returns associated with soybean oil processing.

Objectives of the Study

The study was undertaken with the following objectives:

1. To study the establishment cost of the soybean oil processing unit.
2. To analyse the cost and returns of the major product of the processing unit.

Research Methodology

Study Area

The study was conducted at Vinayak Gold Oil Pvt. Ltd., located at Chikhli in Buldhana district of Maharashtra. Buldhana district forms part of the soybean-producing region of Maharashtra and provides an important raw-material base for soybean processing enterprises.

Selection of the Unit

Vinayak Gold Oil Pvt. Ltd. was purposively selected for the study because it is an established soybean processing enterprise involved in the production of soybean oil. The enterprise was initially started on a small scale during 2001–02 and was formally established on 3 December 2007. The unit subsequently developed its processing operations and became an established agribusiness enterprise in the region.

Nature and Source of Data

The study was primarily based on primary data collected from the selected processing unit for the agricultural year 2025–26. Information regarding establishment investment, processing activity, expenditure, production, selling price and income was obtained through direct interaction with the management of the unit, examination of available records and field-level observations.

Secondary information related to soybean, oilseed production and the broader importance of edible-oil processing was obtained from institutional and published sources, including ICAR publications.

Analytical Framework

The data collected from the enterprise were tabulated and analysed using simple accounting and economic measures.

Establishment Cost: The establishment cost was estimated by considering the investment made in major components

such as:

- Processing plant and machinery
- Boiler
- Land and building
- Another associated establishment investment, wherever applicable

Variable Cost: Variable cost included expenditure that changes with the level of processing and production. Major components included raw material and other operating expenses associated with production.

- **Fixed Cost:** Fixed cost included expenses that do not vary directly with the level of production during the short run. These included depreciations, interest on fixed capital and other fixed operational expenses, as applicable.

- **Total Cost:** The total cost was calculated as:

Total Cost = Total Variable Cost + Total Fixed Cost

Gross Income: Gross income was calculated as:

Gross Income = Quantity of Output × Selling Price

Net Return: Net return was estimated as:

Net Return = Gross Income – Total Cost

Benefit-Cost Ratio: The benefit-cost ratio was calculated as:

B Ratio = Gross Income ÷ Total Cost

B:C ratio greater than one indicates that the gross returns exceed the total cost incurred in the production activity.

Results and Discussion

Establishment Cost of the Soybean Oil Processing Unit

Establishment cost represents the initial capital investment required to establish the processing enterprise. It provides an indication of the financial resources committed to creating the production infrastructure.

Table 1: Component-wise Establishment Cost

Sr. No.	Particulars	Value (Rs.)	Percentage
1	Land & Building (Rent basis)	30,000	0.21%
2	Solvent Extraction Plant & Machinery	1,38,60,000	97.16%
3	Boiler with Accessories	3,50,000	2.45%
4	Pre-operative Expenses	25,000	0.17%
	Total Establishment Cost	1,42,65,000	100%

Source: Primary data collected from the selected processing unit

The total establishment investment of the unit was estimated at ₹1,42,65,000. The largest component was the solvent extraction plant and machinery, accounting for ₹1,38,60,000 or 97.16 per cent of the total establishment cost. This high share indicates that processing machinery constituted the core investment of the enterprise.

The boiler represented an investment of ₹3,50,000, accounting for approximately 2.45 per cent of the total establishment cost. Land and building accounted for ₹30,000, representing a relatively small share of the reported establishment investment.

The results indicate that the establishment of a soybean processing enterprise is highly dependent on investment in processing equipment and machinery. Therefore, proper selection, installation, capacity utilization and maintenance of machinery are important for the long-term economic performance of the enterprise.

Annual Cost of Soybean Oil Production

The cost of production is an important indicator of the economic efficiency of an agro-processing enterprise. It determines the expenditure required to operate the processing unit and directly influences profitability.

Table 2: Annual Cost Structure of Soybean Oil Processing

Sr. No.	Particulars	Amount (₹)	Share in Total Cost (%)
1	Variable Cost	45,48,01,087	99.07
2	Fixed Cost	42,89,264	0.93
3	Total Cost	45,90,90,351	100.00

Source: Primary data collected from the selected processing unit.

The total annual cost of the processing unit was estimated at ₹45,90,90,351. Of this, variable cost accounted for ₹45,48,01,087, representing approximately 99.07 per cent of the total cost. Fixed cost amounted to ₹42,89,264, accounting for only 0.93 per cent of the total cost.

The predominance of variable cost indicates that the economic performance of the enterprise is strongly influenced by costs that vary with the scale of processing. In a soybean oil processing enterprise, raw material procurement and other operating expenditures form the major part of production expenditure. Consequently, procurement efficiency, capacity utilization and control of operating expenses are critical for maintaining profitability. The relatively smaller share of fixed cost suggests that the major financial burden during the study year arose from recurring operating expenses rather than from fixed establishment-related costs.

Production and Gross Income

During the study period, the processing unit recorded annual soybean oil output equivalent to approximately 3,475 metric tonnes, corresponding to about 37,78,013 litres of soybean oil. The reported selling price was approximately ₹150 per litre.

Table 3: Production and Gross Income from Soybean Oil

Sr. No.	Particulars	Value
1	Annual production	3,475 MT
2	Approximate output in litres	37,78,013 litres
3	Average selling price	₹150/litre
4	Annual Gross Income	₹56,67,01,950

Source: Primary data collected from the selected processing unit.

The annual gross income generated by the unit was ₹56,67,01,950. The high gross income reflects the scale of processing activity and the market value of soybean oil produced by the enterprise.

Soybean processing has significance beyond the production of edible oil because the processing activity generates economically useful co-products and by-products. The broader soybean-processing sector has been recognized by ICAR as an important area for entrepreneurship and value addition.

The economic importance of soybean processing is further strengthened by India's continuing requirement for edible oils. Increasing domestic production and processing capacity can contribute to reducing the gap between domestic edible-oil supply and demand.

Net Returns from Soybean Oil Processing

Net return represents the surplus remaining after meeting the total cost of production. It is one of the most important indicators for evaluating the economic performance of an enterprise.

Table 4: Cost and Returns of Soybean Oil Processing

Sr. No.	Particulars	Amount (₹)
1	Gross Income	56,67,01,950
2	Total Cost of Production	45,90,90,351
3	Net Return	10,76,11,599
4	B Ratio	1.23

Source: Primary data collected from the selected processing unit

The unit generated a gross income of ₹56,67,01,950 against a total cost of ₹45,90,90,351. The difference between gross income and total cost resulted in a net return of ₹10,76,11,599, equivalent to approximately ₹10.76 crore.

The estimated BC ratio was 1.23, which indicates that every ₹1.00 spent on production generated approximately ₹1.23 in gross returns. Thus, the processing activity was economically viable during the study period.

The positive net return indicates that the enterprise was able to generate a surplus after meeting both variable and fixed costs. However, because the processing industry is exposed to fluctuations in raw-material prices, energy costs, packaging costs and selling prices, profitability can vary considerably between production periods. Effective cost management is therefore essential for maintaining the observed level of profitability.

Conclusion

The present study examined the establishment cost and economic performance of Vinayak Gold Oil Pvt. Ltd., a soybean oil processing unit located in Chikhli, Buldhana district of Maharashtra. The analysis was based on primary information collected for the agricultural year 2025–26.

The total establishment investment of the processing unit was estimated at ₹1,42,65,000, with solvent extraction plant and machinery constituting the largest component of the investment. This indicates that processing machinery is the principal capital requirement for establishing a soybean oil processing enterprise.

The annual total cost of production was estimated at ₹45,90,90,351, of which variable cost represented approximately 99.07 per cent, while fixed cost represented 0.93 per cent. The unit generated a gross income of ₹56,67,01,950 and achieved a net return of ₹10,76,11,599. The estimated B ratio of 1.23 indicates that soybean oil processing was economically viable during the study period. The findings suggest that soybean oil processing can provide a profitable avenue for agricultural value addition when adequate processing infrastructure, raw-material availability and effective cost management are maintained. Since variable costs constitute the overwhelming share of total expenditure, particular attention should be given to raw-material procurement, processing efficiency, energy utilization and other operating expenses. Improved capacity utilization and appropriate financial and technological management can further strengthen the economic performance of soybean processing enterprises.

From a wider perspective, economically viable soybean processing units can contribute to agricultural value addition, rural industrialization, employment generation and strengthening of the domestic edible-oil sector. Therefore, encouraging efficient soybean processing enterprises, along with strengthening rawmaterial supply and processing

technologies, can support the development of a more resilient domestic vegetable-oil industry.

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