Project Profile: Peanut Butter Manufacturing

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Introduction

In India, ground-nut is primarily considered an oil seed and only a small quantity of this oil seed is directly used as food. The per capita consumption of ground-nut in remote areas of our country has been estimated to be less than 5 gm/day. Ground-nuts have been recommended as a good source of protein. The ground-nut cake and flour is now generally used in the preparation of protein isolate and weaning foods. Pea-nut butter is made from pea-nut, vegetable fat, salt and sugar, etc. and is of delicious flavour and high nutritive value like milk butter with low cost. It has butter like consistency and can be used as a substitute for butter.

Peanut butter is made from raw peanuts by roasting and crushing to paste. It is very nutritional product as it contains about 48% protein and minerals. It is used widely as bread spread. In India it is gradually becoming popular in urban areas. Super market shelf now can be seen with peanut butter jar. There are mainly two types of peanut butter based on smoothness of the end product. Creamy products are very fine and crunchy products are coarse in nature. Moreover other types are made by adding small quantity of chocolate or fruit jelly. The shelf life of the butter is about twelve months from the date of manufacturing. It is not required to store peanut butter in refrigerator or cold temperature. It can be stored at ambient temperature. However once seal is opened it has to be under lower temperature.

Products and Its Application

Peanut butter is formulated using good quality peanut paste, sugar, salt; stabilizer etc. to prevent oil separation in the container stabilizer is added at the end of the process. The taste of peanut butter varies from place to place. Therefore addition of sugar and salt is done depending on the local demand. For consumer pack it is usually packed in 200, 500 and 1000 grams PET jar. USA is the largest consumer of Peanut Butter.

For institutional sales, it is packed in larger containers of five and ten Kg. pales. For industrial applications such as in confectionary, Chocolate, bakery products, ice-cream etc. it is packed in 200 Kg drums.

Desired Qualification

The promoter may have experience in selling consumer food products or having knowledge of sourcing good quality peanuts. Academic qualification in science or food technology may be advantageous to produce quality peanut butter.

Industry Outlook / Trend

The size of Indian food processing industry is estimated to be at around rupees 12 lakh crores. It contributes 9% of country GDP and growing at about 10% per annum. With encouragement to setup food processing parks and incentives from Government, Food processing sector is growing rapidly. The newer products in the market are being introduced with advanced technology, packaging and enhanced shelf-life.

Market Potential

There are about ten plants producing peanut butter in India and mainly concentrated in the state of Gujarat. Most of the existing units are exporting peanut butter to Middle East, south East Asia, Japan, USA, Canada and some of the African countries. The Existing units are working reasonably well and some of them are expansion mode. However they face problem of getting quality peanut as available raw material in India is highly infected with aflatoxin and it is a matter of concern for export.

While export market is still growing and Indian share is increasing in international market, back home market for peanut butter is limited but growing at slower pace.

With increase in awareness and health benefits, future books bright for local sell. In India institutional sale is rapidly increasing with newer products in the market.

Foreign companies are also putting up their facilities in food processing sector and some of them need peanut butter.

Due to shortage of milk in the country, butter is becoming costlier day by day and is gradually going beyond the reach of the common people. The main raw material for pea-nut butter is ground-nut which is available in reasonable quantity. The ground-nut can be best utilized for the production of Pea-nut Butter to cater to the needs of the common people. It has good market potential.

Raw Material

The main raw material required is good quality peanut having aflatoxin content less than 5 ppb. The main producing states for raw peanut are Gujarat, Andhra Pradesh, Uttar Pradesh, Bihar and Rajasthan. It is usually bought in deshell form to prevent dusting. As shelf life of peanut is short it is purchased as and when required or stored at about 8 degree centigrade.

Other raw materials like sugar, salt and stabilizer are locally available without any difficulty. Packaging material such as PET jar, plastic pale, corrugated box, sealing tape etc. are required to pack jars. It is mandatory to write ingredients used in formulation of peanut butter.

Manufacturing Process

HPS peanuts are first fed to the hopper of conveyer equipped with magnet. It is then taken in to roaster where peanuts are heated at about 90 degree and cooled in a cooler with high flow of air. Roasted peanuts are blanched to remove red skin. After blanching, peanuts are fed to picking table to remove damaged peanuts manually and then pass through electronic shorting machine. This ensures aflatoxin control.

Split nuts are taken to peanut butter mill where it is crushed to required fineness and additives such as sugar, salt and stabilizer are added in required quantity. For removal of encapsulated air, it is taken to aeration tank. For texture and

smoothness it is than pass through votator at very low temperature. After these peanut butter is packed in required containers using packing line.

Technical Aspects

Best quality pea-nuts (ground-nuts) are selected. After decortication, the kernels are roasted carefully in an oven with continuous stirring until they begin to brown. The temperature should not exceed 240º F. When an oven is used, care is necessary in roasting the nuts otherwise the butter will have darkened colour and burnt taste. If these are under roasted, these lack flavour and colour and do not keep well. The roasted kernels are separated into halves by rubbing on a sieve. The skin and ‘germ' or embryo are then removed. The presence of the germ is liable to cause the butter to go rancid sooner than it would otherwise and the skins show up red specks and give a slightly bitter taste. The white kernels are made into a paste neither too fine nor too coarse in a grinder. Before grinding, it is usual to add salt 1-3 percent and also sugar according to taste. To stabilize the peanut butter, solid hydrogenated fats such as Dalda, Marvo, etc. are added to the paste upto 2 percent, the amount depending upon the type of nuts, degree of solidity and the temperature. The mixture is then run through a homogeniser. There is no necessity of adding any chemical preservatives to the pea-nut butter. However, some anti–oxidants are added to stabilize the pea-nut butter. The butter can be kept in closed jars in a cool, dry place for several months. It is packed in cans and sterilized. Rust resistant lacquered cans should be used.

Quality Control and Standards

Product must meet PFA regulations. However, ISI specification for peanut butter is IS:9037:1979. It may also be manufactured as per the consumers' choice of taste and aroma. Production Capacity The scheme has been drawn for the manufacture of 1000 Kg. salted pea-nut butter per day and the sale value of the finished product has been taken into account @ Rs 60 per Kg. Motive Power The estimated power requirement for the plant and machinery including lighting and fittings is approximately 55 HP or 40 K.

Pollution Control

The proposed unit for the manufacturing of peanut butter does not cause any pollution and hence does not require any precautionary steps to be taken for pollution control. However, no objection certificate may be obtained from the concerned State Pollution Control Board. Energy Conservation Only motive power is used to operate various machinery and equipment and hence care should be taken in operating machinery to minimize the electrical consumption.

Manpower Requirement

For the production of peanut butter following category of manpower will be required for day to day production.

Sr.No.	Designation	No. of employees required	Amount (Per Person)	Total
1	Unskilled Labour	4	6,000	24,000
2	Production Manager	1	30,000	30,000
3	Supervisor	1	20,000	20,000
4	Lab Chemist	1	20,000	20,000
5	Skilled Labour	6	9,000	54,000
6	Accountant	1	13,000	13,000
7	Office Assistant	1	6,000	6,000
Total				**1,67,000**

Implementation Schedule

The project can be commissioned within eight months of tying up of finance. There is no complicated machinery and equipment required and space required is also small. Therefore, implementation time is eight months.

Cost of Project

The cost of project as per market rate of factory building, machinery, and miscellaneous items, preliminary and pre-operative expenses works out as under:

Sr. No.	Particulars	Amount
1	Land(rent)	30,000
2	Plant & Machinery	7,55,000
3	Furniture & Electrical Installations	90,000
4	Miscellaneous	40,000
Total		**9,15,000**

Means of Finance

Based on the present norms of bank, means of finance is worked out as under:

Sr. No.	Particulars	Amount
1	Promoter's contribution	3,25,000
2	Bank Finance	7,57,000
Total		**10,82,000**

Break-Even Analysis

Sr. No.	Particulars	Details
1	Fixed Investment (A)	915000
2	Loan	757000

3	Interest Rate @7.5% on Loan (B)	56775
4	Capital Investment	325000
5	Depreciation @10% on Capital investment (C)	32500
6	**Total Fixed cost (D = A+B+C)**	**1004275**
7	Variable Cost (E)	10000
8	Manpower cost (F)	167000
9	Total Variable cost (G = E+F)	177000
10	Number of Units Sold/Month (H)	750
11	Average Variable cost (I = G/H)	236.00
12	Selling price per unit (J)	500
13	**Contribution margin (K = J-I)**	**264.00**
14	**Beak Even Point in Units (D/K)**	**3804**

Assumptions

- Interest rate is assumed at the rate of 7.5% p.a.
- Depreciation on capital investment i.e. machinery would be 10% p.a.
- Unit can produce 2000 kgs p.m. at full capacity then it would be at breakeven when they will sell 3804 packets of 1kg.
- Variable cost comprises of the raw material price p.m. and electricity and other administrative/utility expenses.

List of Machinery Required & Their Manufacturers

The machinery required for the production of Peanut Butter are as below. Peanut Roaster, Peanut Cooler, Split Nut Blancher, Cyclone Separator, Picking Table, Ingredient Mixer, Peanut Butter Mill, Aeration Tank, Scrap Surface Heat exchanger, Votator, Packing Line, Bucket Conveyors and Laboratory Instruments

- M/s. Unitech Engg. (P) Ltd. Post Box No. 199, Ambala Road, Saharanpur (U.P)
- M/s. Larsen and Tubro Ltd. 10, House Bellard Estate, P.B. No. 278, Mumbai.
- M/s. Alfa Level Ltd. 10A, Hochi-Min Sarani, Kolkata-700071.
- M/s. Container Industries Block -C, Unit No. 299, Ghat Koper Industrial Estate, 72, Lal Bahadur Marg, Mumbai.
- M/s. Pasteur Engg. Co (P) Ltd. 15/8/A, The Mall Road, Dum Dum, Kolkata-700085

Statutory/Government Approvals

The Ministry of Food Processing Industries has been operating several plan schemes for the development of processed food sector in the country during the 10th Plan. One of the schemes relates to the Technology Up-gradation/ Establishment/ Modernization of food processing industries.

The Indian food processing industry is regulated by several laws which govern the aspects of sanitation, licensing and other necessary permits that are required to start up and run a food business. The legislation that dealt with food safety in India was the Prevention of Food Adulteration Act, 1954 (hereinafter referred to as "**PFA**"). The PFA had been in place for over five decades and there was a need for change due to varied reasons which include the changing requirements of our food industry. The act brought into force in place of the PFA is the Food Safety and Standards Act, 2006 (hereinafter referred to as "**FSSA**") that overrides all other food related laws.

FSSA initiates harmonization of India's food regulations as per international standards. It establishes a new national regulatory body, the Food Safety and Standards Authority of India (hereinafter referred to as "**FSSAI**"), to develop science based standards for food and to regulate and monitor the manufacture, processing, storage, distribution, sale and import of food so as to ensure the availability of safe and wholesome food for human consumption. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

All food imports will therefore be subject to the provisions of the FSSA and rules and regulations which as notified by the Government on 5th of August 2011 will be applicable.

Key Regulations of FSSA

A. Packaging and Labeling

B. Signage and Customer Notices

C. Licensing Registration and Health and Sanitary Permits

Backward & Forward Integration

The program's goal is to deliver efficient and seamless backward and forward integration for the processed food sector by filling in the supply chain's gaps in terms of raw material availability and connections to the market. The programme offers financial support for the establishment of main processing/collection centres at farm gates and contemporary retail stores at the entrance, as well as connectivity through insulated/refrigerated transport. The programme is applicable to both horticultural and non-horticultural perishable goods, including fruits, vegetables, dairy products, meat, poultry, fish, ready-to-eat foods, honey, coconut, spices, and mushrooms. The Scheme would make it possible to connect farmers with processors and the market to guarantee that agricultural produce would fetch fair prices.

Training Centers/Courses

For food processing industry training and short term courses are available at Indian Institute of Food Processing Technology, Thanjavur, Tamil Nadu and Central Food Technological Institute, Mysore, Karnataka and Ground Nut Research Centre, Junagarh, Gujarat.

Udyamimitra portal (ink: www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship development programs help to run businesses successfully and are available from Institutes Ike Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.