



PM Formalisation of Micro Food Processing Enterprises Scheme

DETAILED PROJECT REPORT FOR PROCESSING OF COFFEE POWDER



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1 EXECUTIVE SUMMARY

Coffee is one of the popular hot beverages in India along with tea. Although Indians have been cultivating coffee for hundreds of years, the first seeds of coffee were planted by Baba Budan (a saint) way back in the 1600s on the Chandragiri hills (now called Baba Budan Giri) in Chikmagalur district, Karnataka. Coffee plantations were established in and around Baba Budan Giri only in 1840. Even today, the production of coffee lies primarily in the hills of the southern region, of which Karnataka accounts for the highest yield.

Coffee is a brewed drink prepared from roasted coffee beans, the seeds of berries from certain Coffee species. When coffee berries turn from green to bright red in color – indicating ripeness – they are picked, processed, and dried. Dried coffee seeds are roasted to varying degrees, depending on the desired flavor.

The two most commonly grown coffee bean types are *C. arabica* and *C. robusta*. Coffee plants are now cultivated in over 70 countries, primarily in the equatorial regions of the Americas, Southeast Asia, the Indian subcontinent, and Africa. As of 2018, Brazil was the leading grower of coffee beans, producing 35% of the world total. Coffee is a major export commodity as the leading legal agricultural export for numerous countries. It is one of the most valuable commodities exported by developing countries.

Green, unroasted coffee is one of the most traded agricultural commodities in the world. The way developed countries trade coffee with developing nations has been criticised, as well as the impact on the environment with regards to the clearing of land for coffee-growing and water use. Consequently, the markets for fair trade and organic coffee are expanding.

TABLE 1 PROJECT AT GLANCE

1	Name of the proposed project	Coffee Powder Unit
2	Name of the entrepreneur/FPO/SHG/ Cooperative	
3	Nature of proposed project	
4	Registered office	
5	Project site/location	
6	Names of Partner (if partnership)	
7	No of shareholders (if company/FPC)	
8	Technical advisor	
9	Marketing advisor/partners	
10	Proposed project capacity	40 MT/annum (70, 80 & 90% capacity utilization in the 2nd, 3rd and 4th years' onwards respectively)
11	Raw materials	Coffee Beans
12	Major product outputs	Coffee Powder
13	Total project cost :	Rs. 30.00 Lakhs
	· Land development, building & civil : construction	Rs. 3.20 Lakhs
	· Machinery and equipment's :	Rs. 21.62 Lakhs
	· Utilities (Power & water facilities) :	Rs. 0.5 Lakhs
	· Miscellaneous fixed assets :	Rs. 0.4 Lakhs
	· Pre-operative expenses :	Rs. 1.00 Lakhs
	· Contingencies :	Rs. 1.00 Lakhs
	· Working capital margin :	Rs. 2.28 Lakhs
14	Working capital requirement	
	· 2nd year	Rs. 4.74 Lakhs
	· 3rd year	Rs. 6.29 Lakhs
	· 4th year	Rs. 7.33 Lakhs
15	Means of Finance	
	· Subsidy grant by MoFPI (max 10 lakhs) : :	Rs. 10.00 Lakhs
	· Promoter's contribution (min 20%)	Rs. 6.00 Lakhs
	· Term loan (45%) :	Rs. 14.00 Lakhs
16	Debt-equity ratio	2.90
17	Profit after Depreciation, Interest & Tax	
	· 2nd year	Rs. 16.36

	· 3rd year	Rs. 17.05
	· 4nd year	Rs. 20.36
18	Average DSCR	4.34
19	Benefit-Cost Ratio	1.25
20	Term loan repayment	7 Years with 1year grace period
21	Payback period for investment	2 years 5 months

2 OBJECTIVE OF THE PROJECT

The Prime Objective of the Report is to present a Viable Bankable Model of “**Coffee Powder Manufacturing Unit**” through adoption of appropriate technology, utilization of resources, quality production and suitable market strategy.

Some important objectives behind setup of “Coffee Powder Manufacturing Unit” are:

- ✓ The prime objective is to setup this unit is to produce & make available quality product in most hygienic conditions with good packaging, untouched & with very less human interference during entire operations till market.
- ✓ To produce & market safe, quality-assured products with highest nutrient value than existing one.
- ✓ Improve customer’s nutrition by allowing them to consume quality processed product.
- ✓ Empowering the lifestyle of promoter by adopting proper techniques in production and marketing of final product.
- ✓ Proper utilization of land, water, labour & other resources for better plant economics.
- ✓ Employment generation for youth and women in surrounding areas.

3 PROJECT PROFILE

Project profile is as below.

TABLE 2
PROJECT DESCRIPTION

PARTICULARS	DESCRIPTION
Project Name	"SET UP OF COFFEE POWDER UNIT"
Project Location	NA
Project Location Distance From District	NA
Project Area	5000 Sq ft.
Project Proposed Economic Activities	✓ Setup of Coffee Powder Unit
Project Capacity/Annum	Coffee Powder Unit ✓ 300 Kg/Day Input Capacity

4 GENERAL OVERVIEW OF COFFEE PRODUCTION, CLUSTERS, PHM AND VALUE ADDITION IN INDIA

4.1 INTRODUCTION

India is the world's sixth largest coffee producer, behind Brazil, Vietnam, Indonesia, Colombia and Ethiopia, with a total production in 2014/15 of some 5.5 million bags. It exports around 70 percent of this - with exports of greens roughly split between 30 percent Arabica and 70 percent Robusta. Coffee consumption more than doubled between 2000 and 2011 and continues to steadily increase by some 5-6 percent annually. The potential for growth is enormous: it is estimated that India's middle class currently numbers some 50 million people (as of 2011, the last year data is available), but by 2025 it is predicted to have expanded to 547 million people - some 41 percent of the population. Coffee consumption more than doubled between 2000 and 2011 and continues to steadily increase by some 5-6 percent annually. The potential for growth is enormous: it is estimated that India's middle class currently numbers some 50 million people (as of 2011, the last year data is available), but by 2025 it is predicted to have expanded to 547 million people - some 41 percent of the population.

The India Coffee Board was established in 1907 to help improve quality and presence of Indian coffee through various research and education endeavors. The board, throughout the modern history of the country, has stringently regulated the coffee sector, particularly in the period between 1942 and 1995. Upon liberalization in 1995, growers were given free rein to sell their produce wherever they choose. The vast majority is still produced in the traditional growing regions in the southern states of Karnataka, Kerala and Tamil Nadu, which counted for around 90% of the country's production during 2014/15. The rest is grown in the more recently developed areas of Andhra Pradesh and Orissa in the Eastern Ghats, and the North Eastern 'Seven Sister' states of Assam, Manipur, Meghalaya, Mizoram, Tripura, Nagaland and Arunachal Pradesh.

4.2 ORIGIN, DISTRIBUTION AND PRODUCTION OF COFFEE

Coffee was allegedly born before 1,000 A.D. when legend has it that a shepherd named Kaldi, in Caffa, Ethiopia noticed that his sheep became hyperactive after grazing on some red berries. Coffee was first introduced in Turkey during the Ottoman Empire around A.D. 1453 and coffee shops opened to the public. Coffee came to India via Mysore in Karnataka, brought secretly by a Sufi Saint from Meccan named Baba Budan. Coffee is pleasure. Its taste, flavor, aroma and refreshing effect makes it unique.

Green coffee: A green coffee bean is a commercial term which designates the dried seed of the coffee plant. It has about 10.0% moisture. Coffee plant or tree belongs to Coffea genus.

World major coffee players

- 1) Starbucks corporation
- 2) The Kraft Heinz company
- 3) The coca cola company
- 4) Tata global beverages
- 5) Nestle SA
- 6) JM Smucker company
- 7) JAB Holding company
- 8) Luigi Lavazza SPA

4.3 VARITIES

Two species are commercially important for green coffee:

- Coffea canephora (also referred to as C. robusta)
- Coffea arabica L.

4.4 STRUCTURE AND CHEMICAL COMPOSITION OF COFFE BEAN

**FIGURE 1
STRUCTURE OF COFFEE BEANS**

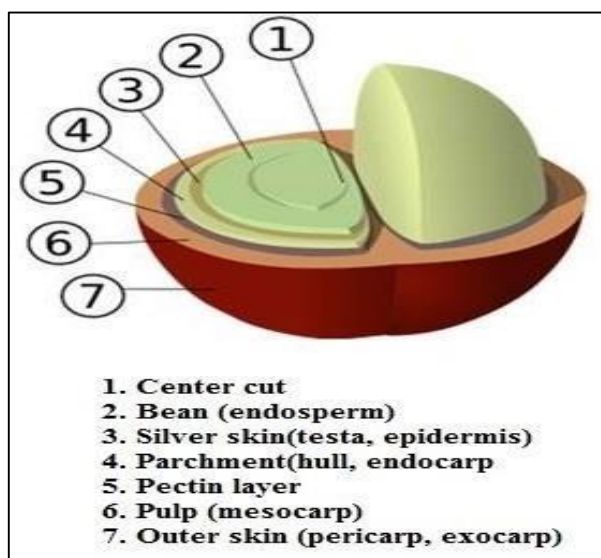


TABLE 3
CHEMICAL COMPOSITION OF COFFEE BEANS

Sr. No.	Components	Arabica Coffee (In %)
1	Polysaccharides	49.8
2	Sucrose	8
3	Reducing sugars	0.1
4	Other Sugars	1
5	Lipids	16.2
6	Proteins	9.8
7	Amino Acids	0.5
8	Aliphatic Acids	1.1
9	Quinic Acid	0.4
10	Chlogenic Acids	6.5
11	Caffeine	1.2
12	Trigonrlline	1
13	Minerals (as oxide ash)	4.2
14	Volatile Aroma	Traces
15	Water	8 to12

4.5 HEALTH BENEFITS AND NUTRITIONAL IMPORTANCE

Coffee is a brewed drink prepared using roasted coffee beans which are taken from the berries of the *Coffea* plant. There are two main species of coffee beans which are the Arabica and Robusta, and depending on where they are grown, both the country and the altitude determines the flavour of the coffee. For example, Brazilian coffee usually has more chocolate and spice flavour compared to Ethiopian coffee which has a stronger, sweet berry flavour.

There are two main factors that could be considered benefits to drinking coffee. The first is associated with its high antioxidant status. Antioxidants are important for health as they prevent our cells from being oxidised by toxins, chemicals and inflammation. The second is the stimulant caffeine, although this also presents potential risk factors if consumed in excessive amounts and for certain people who may be vulnerable to its effects (see below). Coffee, in addition, does contain some B vitamins, magnesium and potassium. Three cups of coffee per day could lengthen lifespan by lowering the risk of death from several key conditions including heart disease.

Health Benefits

- Lowering the risk of Heart disease
- Increase energy and performance
- Boost Metabolism

- Support Brain Functions
- Blood sugar balance
- Coffee is a wonderful beverage that can reduce depression
- Coffee is a natural source of anti-oxidants
- Coffee can help in preventing a certain type of cancers such as colorectal cancer.

TABLE 4
NUTRITIONAL COMPOSITION OF COFFEE (SERVING 6 GM)

Sr.No	Nutrient	Amount
1	Calories	18
2	Carbohydrate	2 grams (g)
3	Protein	0.3 g
4	Fat	1 g

4.6 CULTIVATION, BEARING AND POST-HARVEST MANAGERMENTS

Coffee is the second most important beverage crop of India next only to tea. It is indigenous to Abyssinia Plateau (Ethiopia) from where it was taken to Arabia in 11th century. From Arabia, its seeds were brought to India by Baba Budan in the 17th Century and were raised in the Baba Budan Hills of Karnataka.

The roots of the plant penetrate to a depth of 2.5 to 4 m, and can spread to a length of 2 to 2.5 m. The flowers of the plant are white or pinkish in colour with very nice fragrance. They are arranged in the form of 3 to 16 glomerules grouped together in the axils of the leaves. The flowers wither off within a few hours of blooming. These are self fertile and produce fruits without pollination. The fruit of the coffee plant is oval in shape and resemble olives. The fruit turns red upon ripening and consists of two seeds. The plants bear fruits and flowers at least two to three times in a year and ripen in 6 to 7 months. The ripening period may vary for different plantations depending on the external environmental conditions of the area. Fruit is the most essential part of the plant.

FIGURE 2 COFFEE CROP



In India, coffee is traditionally grown in the Western Ghats spread over Karnataka, Kerala and Tamil Nadu. Coffee cultivation is also being expanding rapidly in the non-traditional areas of Andhra Pradesh and Odisha as well as in the North East states.

Climate Requirement for Coffee Farming

Coffee plant requires hot and humid climate with temperature varying between 15°C and 28 °C and rainfall from 150 to 250 cm. It does not tolerate frost, snowfall, high temperature above 30°C and strong sun shine and is generally grown under shady trees. Prolonged drought is also injurious to coffee. Dry weather is necessary at the time of ripening of the berries.

Stagnant water is harmful and this crop is grown on hill slopes at elevations from 600 to 1,600 metres above sea level. Northern and eastern aspects of slopes are preferred as they are less exposed to strong afternoon sun and the south- west monsoon winds. Well drained, rich friable loams containing good deal of humus and minerals like iron and calcium are ideal for coffee cultivation.

Soil Requirement for Coffee Farming

The soil must be properly manured to retain and replenish fertility and to increase productivity. Coffee cultivation requires plenty of cheap and skilled labour for various operations including sowing, transplanting, pruning, plucking, drying, grading and packing of coffee.

**FIGURE 3
HARVESTING OF COFFEE FRUIT**



Post-Harvest Management: -

Production of speciality coffee needs a proper plan for harvesting the coffee cherries as it gives good economic returns for producers. The time of harvest varies in different places. According to the processing method to be implemented, harvesting the coffee cherries without causing damage to the tree is an important task. In most of the coffee-producing countries, coffee is harvested once per year. As the coffee cherries mature, the coffee fruit contains suitable chemical compositions which lead the fruit to the best quality. The coffee fruit also contains volatile compounds that are responsible for the aroma and flavour properties of the coffee. These compounds are present at a very low amount at the early stage of the coffee cherry, but later on, it increases as the coffee transformed to the maturity stage. There are two strategies (strip and selective picking) for harvesting the coffee cherries, which are widely used.

Strip picking

This strategy is usually done by machinery or by hand. The whole coffee cherries are harvested at one time. The harvested coffee may not achieve the desired quality due to the mixture of underripen or overripe coffee cherries. In order to use machinery for harvesting the coffee cherry, the following factors are critically important such as the topography, inclination, spacing, alignment, and the height of the plant. Considering these factors, the producer should choose the right harvesting system that suits their crop.

Selective picking

The major challenges in the coffee sector are obtaining uniform maturity, and at the same time, it is the procedure to provide consistent quality coffee. It is important to note that in most flowering plants the climatic condition during the growing period can change the number of flowering plants which affect the maturation uniformity. In this harvesting system, only the ripened coffee cherries are harvested selectively by hand from the whole tree or branches. The harvested coffee meets the standards due to the uniformity of the cherries. This strategy needs several picking rounds and is labor-intensive. Considering the advantage and disadvantages of both harvesting strategies is the key for coffee growers. The coffee cherry has different layers that surround the beans, such as skin, pulp, mucilage, parchment, silver skin, and finally, the coffee beans

Processing the picked berries to obtain the coffee beans and further processing them to be sold in the market involves a series of steps like drying, grading, packing, storing etc.

- The coffee fruits that are picked should be dried initially. They can be dried under shade, direct sun or by using mechanical hot air drying. 13 to 15% moisture from the berries is removed by drying. Drying the berries under the sun is considered cheap and the product obtained is of higher quality. This method needs much labour, space and time. For drying, the berries are laid with a thickness of 2.5 cm and should be turned every hour.

- Grading of berries is done according to their size and shape. A rotating sieve separates the dry, green and hulled coffee beans. A three dimensional grading is done for flat beans depending on their width, thickness and length.
- The coffee should be packed firmly otherwise pressurized water will break the coffee apart while brewing and doesn't permeate into it evenly. The packing should be free of aluminium such that it becomes highly compatible with the environment.
- The product is considered to be hygroscopic in nature i.e. it absorbs moisture from the air. Both dry and wet processing methods make the coffee less hygroscopic, but it should be stored in well spaced, ventilated and dry areas.

4.7 PROCESSING FLOW CHART

FIGURE 4
PICTORIAL PROCESS FLOW CHART



5 MODEL COFEE POWDER PROCESSING UNDER FME SCHEME

5.1 LOCATION OF PROPOSED PROJECT AND LAND

The entrepreneur must provide description of the proposed location, site of the project, distance from the targeted local and distant markets; and the reasons/advantages thereof i.e. in terms of raw materials availability, market accessibility, logistics support, basic infrastructure availability etc.

The ideal locations for establishment of exclusive Coffee powder Manufacturing unit are in the production clusters of Coffee growing states/Areas such as Bihar, Tripura, West Bengal, Uttar Pradesh, Punjab, Haryana and Uttarakhand where adequate quantities of surplus raw materials can be available for processing.

5.2 INSTALLED CAPACITY OF POCCESSING PLANT

The maximum installed capacity of the manufacturing unit in the present model project is proposed as 300 Kg /Day input capacity of raw coffee beans @ 8-10 hrs/day. The 1st year is assumed to be construction/expansion period of the project; and in the 2nd year 70 percent capacity, 3rd year 80 percent capacity and 4th year onwards 90 percent capacity utilization is assumed in this model project.

5.3 RAW MATERIAL REQRIMENT FOR THE UNIT

A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 250 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory. The processor must have linkage with producer organizations preferably FPCs through legal contract to get adequate quantity and quality of raw materials which otherwise get spoiled.

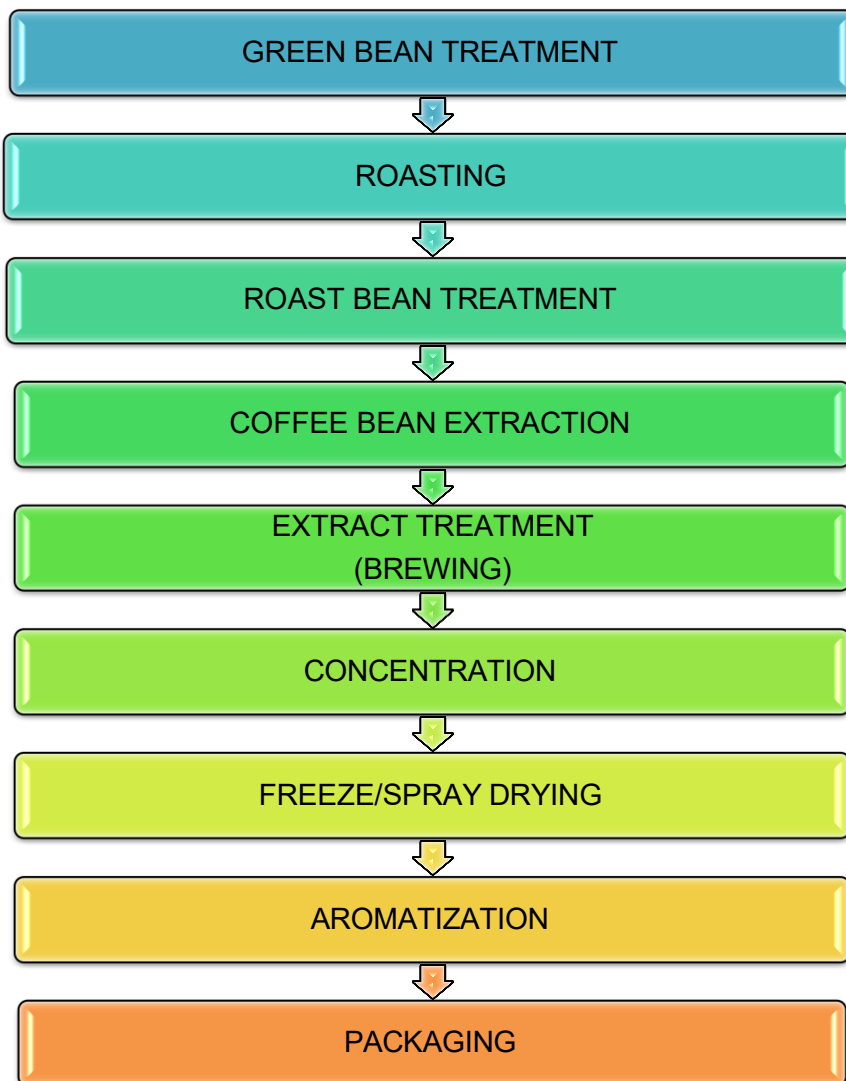
5.4 MANUFACTURING PROCESS

Instant coffee, also called soluble coffee and coffee powder, is a beverage derived from brewed coffee beans. It is the dried soluble portion of roasted coffee, which can be presented to the consumer in either powder or granule form for immediate make-up in hot water. Instant coffee is commercially prepared by either freeze-drying or spray drying, after which it can be rehydrated. Instant coffee was invented in 1901 by Satori Kato, a Japanese scientist working in Chicago. Historically, most instant or soluble coffees first contained added carbohydrates (~ 50% w/w) such as corn syrup solids, as simple aqueous extract of roasted coffee, extracted under atmospheric conditions (100°C). However, it could not be spray dried to a satisfactorily free flowing low-hygroscopic powder.

In 1950, Instant coffee of 100% pure coffee solids became commercially available. In 1965, Instant coffee in soluble form, somewhat darker in colour and improved retention of aromatics became available. The manufacture of instant coffee is accompanied by some

slight hydrolysis of the polysaccharides in the roasted coffee (by further aqueous extraction at temperatures up to 175°C and addition to the simple extract before drying), which is reflected in the slightly increased reducing sugar content (i.e. arabinose, mannose and galactose) and probably assists solubilisation of these polysaccharides, not otherwise easily possible at 100°C. This provides a powder of satisfactory physical properties. Advantages of instant coffee include speed of preparation (instant coffee dissolves instantly in hot water), lower shipping weight and volume than beans or ground coffee (to prepare the same amount of beverage), and long shelf life. About 20% of all processed coffee beans are used for making Instant coffee.

FIGURE 5
COFFEE POWDER PROCESS FLOW



As with regular coffee, the green coffee bean itself is first roasted to bring out flavour and aroma. Rotating cylinders containing the green beans and hot combustion gases are used in most roasting plants. When the bean temperature reaches 165°C the roasting begins, accompanied by a popping sound. These batch cylinders take about 8-15 min to complete roasting with about 25-75% efficiency. Coffee roasting using a fluidized bed only takes from 30 sec to 4 min, and it operates at lower temperatures which allow greater retention of the coffee bean aroma and flavor. The beans are then ground finely.

Grinding reduces the beans to 0.5-1.1mm (0.020-0.043 in) pieces in order to allow the coffee to be put in solution with water for the drying stage. Sets of scored rollers designed to crush the beans. Once roasted and ground, the coffee is dissolved in water, referred to as extraction. Water is added in 5-10 percolation columns at temperatures of 155-180°C; this concentrates the coffee solution to about 15-30% coffee by mass. This may be further concentrated before the drying process begins by either vacuum evaporation or freeze concentration. Freeze drying gives a premium product. It preserves all the desirable aspects of the concentrated coffee extract.

Aromatization of Coffee a term applied to a process, whereby essentially the headspace coffee aroma volatiles are made available by plating coffee aroma oil, prepared by expression methods from roast coffee, or other sources onto the soluble coffee, usually at the packing stage. This is a treatment imparted to improve the flavour and aroma. The powder lacks full flavour and aroma of freshly brewed coffee. The flavor and aroma constituents are trapped and recovered during roasting, grinding and extraction and from oils pressed from coffee bean. The cold CO₂ does not damage the flavour and aroma compounds in coffee oil and it is easily separated from extracted oil for recompression and reuse. After CO₂ removal of the oil, the Roasted and Ground coffee is still highly suitable for extraction of water soluble solids in the regular extraction battery operation.

Food packaging is the enclosing of food for the purpose of protection and preservation. Coffee is an extremely consumer-driven product. Packaging is one of the most important factors driving sales, food identity and brand construction. Package role is to preserve the freshness of coffee and attractive design for marketing and branding. The quality of food powders is based on a variety of properties, depending on the specific application. In general, the final moisture content, insolubility index, dispensability index, free fat, rheological properties, and bulk density are of primary importance. These characteristics depend on drying parameters (type of spray dryers, nozzles/wheels, pressure, agglomeration, and thermodynamic conditions of the air: temperature, relative humidity, and velocity) and characteristics of the concentrate before drying (composition/physicochemical characteristics, viscosity, thermo-sensibility, and availability of water).

5.5 MAEKRT DEMAND AND SUPPLY FOR COFFEE POWDER

India instant coffee market is currently exhibiting a healthy growth. The demand of instant coffee in India is currently driven by several factors. As a result of increasing urbanization levels and changing lifestyles, instant coffee provides consumers the convenience of preparing hot coffee anywhere in a very short time. Other factors which are driving the demand for instant coffee in India include increasing incomes, rising demand from the institutional sector, changing food habits, health benefits, increasing café culture in India, etc.

5.6 DETAIL PROJECT ASSUMPTIONS

This model DPR for Coffee powder unit is basically prepared as a template based on certain assumptions that may vary with capacity, location, raw materials availability etc. An entrepreneur can use this model DPR format and modify as per requirement and suitability. The assumptions made in preparation of this particular DPR are given in This DPR assumes expansion of existing Coffee processing unit by adding Coffee powder manufacturing line. Therefore, land and civil infrastructures are assumed as already available with the entrepreneurs.

Herewith in this DPR, we have considered the assumptions as listed below in the tables of different costs, which may vary as per region, seasons and machinery designs and supplier.

1. Raw Coffee beans cost considered @ Rs.200/-per kg.
2. 1 kg Coffee beans will produce 60% recovery.
3. 1 Batch size is approximately 300 kg.
4. No. of hours per day are approximately 8 hours.

TABLE 5
PROJECT SUMMARY

Sr. No.	Parameter	Value
1	Capacity of the processing unit	300 Kg/Day Raw coffee beans
2	Utilization of capacity	1st year implementation, 60% in 2nd year, 70% in 3rd year and 80% in 4th year onwards.
3	Working days per year	250 days
4	Working hours per day	8 hrs.
5	Interest on term and working capital loan	9.5-10%
6	Repayment period	Seven years with one-year grace period is considered.
7	Average prices of raw material	Rs. 200/Kg.
8	Average sale prices	Coffee Powder
9	Recovery rate	60%
10	Selling Price	Rs. 400/Kg

**TABLE 6
FIXED CAPITAL INVESTMENT**

Sr. No.	Particulars	Size/ Dimensions / Specification	Quantity (No)	Total Area (Sq ft)	Unit Cost (Rs)	Amount (Rs)	Amount (Lakh)
A	Capital Investment		1 Plot			3,20,000	3.20
	Capital Investment					3,20,000	3.20
B	Machinery & Equipment's						
1	Coffee beans extractor	4kg/ hr	4		47500	1,90,000	1.90
2	Centrifuge	10 kg / hr	2		56000	1,12,000	1.12
3	Coffee bean roaster	20 kg / hr	2		50000 0	10,00,000	10.00
4	Grinder	15 kg/ hr	2		85,000	1,70,000	1.70
5	Packaging Machinery	2000 pack/ hr	1		65000 0	6,50,000	6.50
6	Miscellaneous					40,000	0.40
	Machinery & Equipment's					21,62,000	21.62
C	Other Costs						
C1	Utilities & Fittings						
1	Water					50,000	0.50
2	Power						
	Total					50,000	0.50
C2	Other Fixed Assets						
1	Furniture & Fixtures					40,000	0.40
2	Electrical Fittings						
	Total					40,000	0.40
C3	Pre-operative Expenses						
1	Legal Expenses, Start-up Expenses, Establishment Cost, Consultancy fees, Trials and others					1,00,000	1.00
2	Plastic Tray Capacity						
3	Electrical Fittings						
	Total					1,00,000	1.00
C	Total Cost (C1+C2+C3+C4)					1,90,000	2
	Contingency					1,00,000	1
II	Total Cost (I+F+G)					27,72,000	27.72

**TABLE 7
WORKING CAPITAL REQUIRMENTS**

Sr. No.	Description	Period Days	Quantity	Unit Rate/ Kg	Total Cost (Rs) /Day	Total Cost (Rs) / Month	Total Cost (Rs) / Year
1	Coffee Beans		200	200	40,000	10.00	100.00
2	Water		5000 lit	Nil	20	0.01	0.05
3	Packaging Material (100 gm packaging)		640	1.5	960	0.24	2.40
4	Labour		10	300/day	3,000	0.75	7.50
5	Supervisor / Manager		1	500/ day	600.00	0.15	1.50
6	Electricity				360	0.09	0.90
7	Transportation				400	0.10	1.00
8	Miscellaneous				200.00	0.05	0.50
	Total Cost				45,540.00	11.39	113.85
	Margin For Working Capital 20%					2.28	

TABLE 8 TOTAL PROJECT COST

Sr. No.	Particulars	Amount In Lakhs
i	Land Development & Building Structure	3.20
ii	Plant & Machinery	21.62
iii	Other Fixed Assets	1.90
iv	Working Capital Margin	2.28
v	Contingency	1.00
vi	Total Project Cost	30.00

TABLE 9 MEANS OF FINANCE

Sr. No.	Particulars	Amount In Lakhs
i	Subsidy	10.00
ii	Promoters Contribution	6.00
iii	Term Loan	14.00
	Total Means of Finance (1 to 3)	30.00

TABLE 10 EXPENDITURE, REVENUE AND PROFITABILITY

PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
A. INCOME						
Sales of Coffee Powder	-	80.80	106.09	123.64	149.85	168.16
Total	-	80.80	106.09	123.64	149.85	168.16
B. EXPENSES						
Raw Material	-	50.00	66.30	77.25	93.60	105.00
Consumables	-	0.03	0.03	0.04	0.05	0.05
Packing cost	-	1.20	1.59	1.85	2.25	2.52
Transportation cost	-	0.50	0.66	0.77	0.94	1.05
Direct employee cost	-	4.50	5.97	6.95	8.42	9.45
Depreciation	-	3.85	3.31	2.84	2.44	2.09
Office Rent	-					
Plant Electricity Cost	-	0.45	0.60	0.70	0.84	0.95
Miscellaneous	-	0.25	0.33	0.39	0.47	0.53
Office Expenses	-	0.66	0.73	0.80	0.88	0.97
Telephonic Expenses	-	0.06	0.60	0.66	0.73	0.80
Indirect Employee	-	0.50	0.50	0.50	0.50	0.50
Repair & Maintenance	-	0.50	1.50	1.65	1.82	2.00
Audit, Accounts & Compliance	-	0.44	0.44	0.48	0.53	0.59
Total Cost	-	62.94	82.55	94.88	113.45	126.48
Add :- Opening Stock		-	7.23	9.54	11.11	13.47
Less :- Closing Stock	-	7.23	9.54	11.11	13.47	15.11
Cost of Sales	-	55.70	80.25	93.30	111.10	124.84
GROSS PROFIT	-	25.10	25.84	30.33	38.75	43.32
	#DIV/0!	31.06%	24.35%	24.53%	25.86%	25.76%
FINANCE EXPENSES						
Interest on Term Loan	1.68	1.55	1.31	1.07	0.83	0.59
Interest On CC		0.17	0.17	0.17	0.17	0.17
Total Interest	1.68	1.72	1.48	1.24	1.00	0.76
PROFIT BEFORE TAX	-1.68	23.37	24.35	29.09	37.75	42.56

INCOME TAX (30%)	-0.50	7.01	7.31	8.73	11.32	12.77
PROFIT AFTER TAX	-1.18	16.36	17.05	20.36	26.42	29.79

TABLE 11 REPAYMENT SCHEDULE

Year	Outstanding loan at start of yr.	Disbursement	Total outstanding Loan	Surplus for repayment	Interest payment	Repayment of principal	Total out go	o/s Loan at the end of the yr.	Balance left
1	- 0.00	14.00	14.00	1.10	1.68	0	1.68	14.00	-0.58
2	14.00		14.00	7.18	1.55	2.00	3.55	12.00	3.63
3	12.00		12.00	12.24	1.31	2.00	3.31	10.00	8.93
4	10.00		10.00	16.06	1.07	2.00	3.07	8.00	12.99
5	8.00		8.00	20.92	0.83	2.00	2.83	6.00	18.09
6	6.00		6.00	24.68	0.59	2.00	2.59	4.00	22.09
7	4.00		4.00	26.24	0.35	2.00	2.35	2.00	23.89
8	2.00		2.00	31.63	0.11	2.00	2.11	-	29.52

TABLE 12 ASSETS DEPRECIATION

PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Building Structure						
Opening Bal.		3.20	2.88	2.59	2.33	2.10
Additions	3.20					
Less :- Depreciation @ 10%		0.32	0.29	0.26	0.23	0.21
Closing Bal.	3.20	2.88	2.59	2.33	2.10	1.89
PARTICULARS	YEAR					

	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Plant Machinery						
Opening Bal.		21.62	18.38	15.62	13.28	11.29
Additions	21.62					
Less :- Depreciation @ 15%		3.24	2.76	2.34	1.99	1.69
Closing Bal.	21.62	18.38	15.62	13.28	11.29	9.59
PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Other Required Material & Accessories						
Opening Bal.		2.90	2.61	2.35	2.11	1.90
Additions	2.90					
Less :- Depreciation @ 10%		0.29	0.26	0.23	0.21	0.19
Closing Bal.	2.90	2.61	2.35	2.11	1.90	1.71
TOTAL DEPRECIATION	-					
PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Building Structure	-	0.32	0.29	0.26	0.23	0.21
Plant Machinery	-	3.24	2.76	2.34	1.99	1.69
Other Required Material & Accessories	-	0.29	0.26	0.23	0.21	0.19
TOTAL DEPRECIATION	-	3.85	3.31	2.84	2.44	2.09

TABLE 13 FINANCIAL ASSESSMENT OF PROJECT

	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Cost	27.72	62.94	82.55	94.88	113.45	126.48
Benefit	-	80.80	106.09	123.64	149.85	168.16
Discounting Rate	0.91	0.83	0.75	0.68	0.62	0.56
P.V Cost	25.20	52.01	62.02	64.80	70.44	71.40
P.V Benefit	-	66.78	79.71	84.45	93.04	94.92

Total P.V Cost	470.50
Total P.V Benefit	586.08
Benefit Cost Ratio	1.25

TABLE 14 BREAK EVEN ANALYSIS

PARTICULARS	Year					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Annual Production in Kg	-	20,000	26,000	30,000	36,000	40,000
Revenue	-	80.80	106.09	123.64	149.85	168.16
Selling Cost Per Kg		404.00	408.04	412.12	416.24	420.40
	-					
Office & General Expenses	-	1.16	1.77	1.94	2.14	2.35
Depreciation		3.85	3.31	2.84	2.44	2.09
	-					
Total Fixed Cost	-	5.01	5.07	4.78	4.57	4.44
Total Fixed Cost Per Kg		25.07	19.51	15.93	12.70	11.11
	-					
Total Variable Cost	-	56.23	74.55	86.87	105.25	118.07
Variable Cost Per Kg		281.13	286.75	289.56	292.37	295.18
	-					
Contribution	-	24.58	31.54	36.77	44.59	50.09
Contribution per Unit		122.88	121.29	122.56	123.87	125.22
Contribution in %	-	30%	30%	30%	30%	30%
	-					
Break Even Point kg		0	0	0	0	0
Break Even Point Rs	-	4.32	4.37	4.08	3.87	3.74
Break Even In %	-	20.40	16.08	13.00	10.26	8.87
	-					
Margin Of Safty	-	76.48	101.72	119.56	145.98	164.42

5.7 MACHINERY SUPPLIERS

There are many machinery suppliers available within India for processing machineries and equipment. Some of the suppliers are:

1. Spectrum Industries, Karnataka
2. Yeyyadi, Mangalore, Dist. Dakshina Kannada
3. Labh Projects Pvt. Ltd., Ahmedabad
4. Evaporators & Dryers Engineering, Chinchwad, Pune

FIGURE 6
PIA CHART FOR BETTER UNDERSTANDING OF EXPENCES OF EACH HEAD

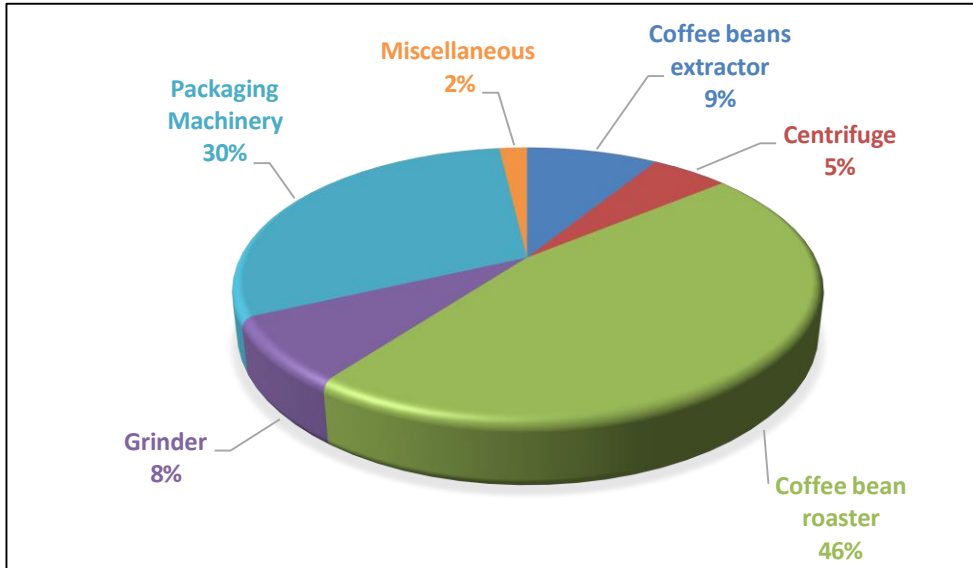
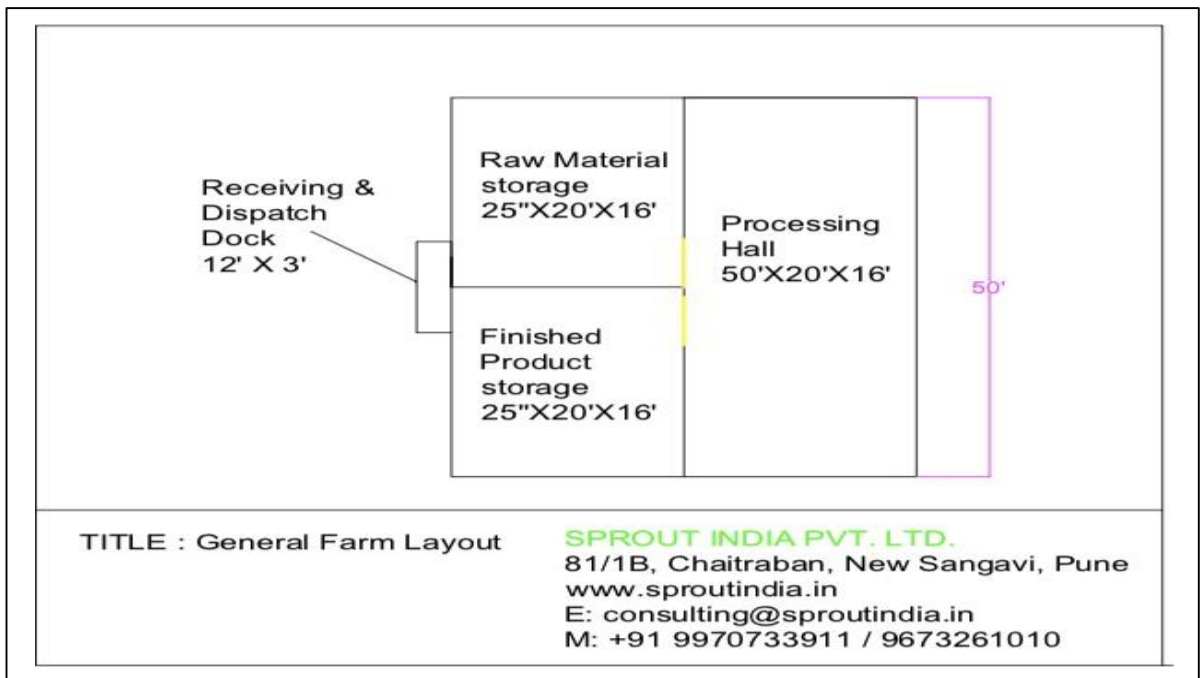


FIGURE 7
PLANT LAYOUT



6 LIMITATIONS OF MODEL DPR AND GUIDELINES FOR ENTREPRENEURS

6.1 LIMITATIONS OF MODEL DPR

i. This DPR has provided only the basic standard components and methodology to be adopted by an entrepreneur while submitting a proposal under the Formalization of Micro Food Processing Enterprises Scheme of MoFPI.

ii. This DPR is made to provide general methodological structure not for specific entrepreneur/crops/location. Therefore, information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of business, background of proposed project, location, raw material base/contract sourcing, entrepreneur's own SWOT analysis, market research, rationale of the project for specific location, community advantage/benefit, employment generation etc are not given in detail.

iii. The present DPR is based on certain assumptions on cost, prices, interest, capacity utilization, output recovery rate and so on. However, these assumptions in reality may vary across places, markets and situations; thus the resultant calculations will also change accordingly.

6.2 GUIDELINES FOR ENTEPRENURES

i. The success of any prospective food processing project depends on how closer the assumptions made in the initial stage are with the reality of the targeted market/place/situation. Therefore, the entrepreneurs must do its homework as realistic as possible on the assumed parameters.

ii. This model DPR must be made more comprehensive by the entrepreneur by including information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of entrepreneur's business, project location, raw material costing base/contract sourcing, detailed market research, comprehensive dehydrated product mix based on demand, rationale of the project for specific location, community advantage/benefit from the project, employment generation, production/availability of the raw materials/crops in the targeted area/clusters and many more relevant aspects for acceptance and approval of the competent authority.

iii. The entrepreneur must be efficient in managing the strategic, financial, operational, material and marketing aspects of a business. In spite of the assumed parameter being closely realistic, a project may become unsustainable if the entrepreneur does not possess the required efficiency in managing different aspects of the business and respond effectively in changing situations.

- iv. The machineries should be purchased after thorough market research and satisfactory demonstration.
- v. The entrepreneur must ensure uninterrupted quality raw materials' supply and maintain optimum inventory levels for smooth operations management.
- vi. The entrepreneur must possess a strategic look to steer the business in upward trajectory.
- vii. The entrepreneur must maintain optimum (not more or less) inventory, current assets. Selecting optimum source of finance, not too high debt-equity ratio, proper capital budgeting and judicious utilization of surplus profit for expansion is must.
- viii. The entrepreneur must explore prospective markets through extensive research, find innovative marketing strategy, and maintain quality, adjust product mix to demand.
- ix. The entrepreneur must provide required documents on land, financial transaction, balance sheet, further project analysis as required by the competent authority for approval.
- x. The entrepreneur must be hopeful and remain positive in attitude while all situations.

-END OF THE REPORT -



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