Detailed Project Report

INDIAN COTTAGE CHEESE (PANEER) MANUFACTURING UNIT

Under the Formalization of Micro Food Processing Enterprises Scheme

(Ministry of Food Processing Industries, Government of India)

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11	Raw materials	Milk
12	Major product outputs	Paneer
13	Total project cost (Lakhs)	33.81
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	2nd year	111.49

	3rd year	132.22
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18	Average DSCR	2.16
	Benefit Cost Ratio	3.877131211
	Term Loan Payment	7 Years with 1 year grace period
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2. GENERAL OVERVIEW AND INTRODUCTION

- In the last three decades, **world milk production** has increased by more than 59 percent, from 530 million tones in 1988 to 843 million tonnes in 2018.
- India is the top country by production of milk in the world. As of 2020, production of milk in India was 194,800 thousand tonnes that accounts for 22% of the world's production of milk. The top 5 countries (others are the United States of America, China, Russian Federation, and Brazil) account for 80.80% of it. The world's total production of milk was estimated at 480,256 thousand tonnes in 2020.
- The bulk of milk production is processed before being marketed as liquid milk (e. G. standardized, pasteurized, skimmed, etc.) or is manufactured in to products such as cream, butter, cheese, evaporated and condensed milk, milk powder, casein, yogurt, ice cream, etc. About 70 percent of whole milk is processed into dairy products; the by-products of these processes (e. G. skim milk, buttermilk and whey) are used either for feed or are manufactured into other dairy products, e. G. dry skim milk and low-fat cheese. Processed milk and dairy products are often supplemented with vitamins, mineral and various additives.
- India and Pakistan are expected to contribute to more than half of the growth in world milk production over the next ten years. They are also expected to account for more than 30% of world production in 2029. Production will occur mostly in small herds of a few cows or buffaloes. It is expected that yields will continue to grow fast and contribute more to production growth. Nevertheless, the growing herd sizes and

limited growth in pasture area require an intensification of pasture use. In both countries, the vast majority of production will be consumed domestically as few fresh products and dairy products are traded internationally.

- Most of the dairy production is consumed in the form of fresh dairy products, including pasteurized and fermented products. The share of fresh dairy products in world global consumption is expected to increase over the coming decade due to stronger demand growth in India and Pakistan in particular, which in turn is driven by income and population growth. World per capita consumption of fresh dairy products is projected to increase by 1.0% p.a. over the coming decade, slightly faster than over the past ten years, driven by higher per-capita income growth.
- The level of milk consumption in terms of milk solids per capita will vary largely worldwide. Country income per capita and the impact of regional preferences will be important factors driving this consumption variation. For example, the per capita intake is expected to be high in India and Pakistan, but low in China. The share of processed dairy products (especially cheese) in the overall consumption of milk solids is expected to be closely related to income development, with variations due to local preferences and level of urbanization.
- In Europe and North America, overall per capita demand for fresh dairy products is stable to declining, but the composition of demand has been shifting over the last several years towards dairy fat, e.g. full-fat drinking milk and cream. Consumers may be influenced by recent studies that have shed a more positive light on the health benefits of dairy fat consumption. In addition, this shift may reflect increasing consumer preference for less processed foods.
- The largest percentage of total cheese consumption occurs in Europe and North America, where per capita consumption is expected to continue to increase. Consumption of cheese will also increase where it was not traditionally part of the national diet. This is the case, for example in South East Asian countries urbanisation and income increases have resulted in more away-from-home eating, including fast food such as burgers and pizzas. The dominant use of SMP and WMP will continue

to be in the manufacturing sector, notably in confectionary, infant formula, and bakery products.

- While some regions are self-sufficient, e.g. India and Pakistan, total dairy consumption in Africa, South East Asian countries, and the Middle East and North Africa is expected to grow faster than production, leading to an increase in dairy imports. As liquid milk is more expensive to trade, this additional demand growth is expected to be met with milk powders, where water is added for final consumption or further processing.
- A small share of dairy products, especially SMP and whey powder, are used in animal feed. China imports both products for feeding and the African Swine Fever (ASF) outbreak reduced its demand. With the expected recovery (see Chapter 6 on meat), the feed demand for SMP and whey powder is expected to grow over the coming decade.

2. ORIGIN, DISTRIBUTION AND PRODUCTION OF PANEER

- Modern paneer is usually traced back to the Persian and Afghan rulers who introduced it in the 16th century, primarily in North India, where it was made with either goat or sheep rennet. The term "**paneer**" comes from the word "peynir," which just means "cheese" in the Turkish and Persian Languages.
- The origin of paneer itself is debated. Ancient Indian, Afghan-Iranian and Portuguese-Bengali origins have been proposed for paneer.
- Vedic literature refers to a substance that is interpreted by some authors, such as Sanjeev Kapoor, as a form of paneer. According to Arthur Berriedale Keith, a kind of cheese is "perhaps referred to" in Rigveda However, Otto Schrader believes that the Rigveda only mentions "a skin of sour milk, not cheese in the proper sense". K. T. Achaya mentions that acidulation of milk was a taboo in the ancient Indo-Aryan culture, pointing out that the legends about Krishna make several references to milk,
  butter, ghee and dahi (yogurt), but do not mention sour milk cheese

- Ayurveda mentions *dadhanwat*, a milk product similar to paneer and ripened cheese today.
- For the making of what is today called chhana, Manasollasa, the 12th century Sanskrit text recommends the addition of a sour substance (even sour curds from a previous operation) to boiled milk, after which the precipitate was separated, the cheese then mixed with rice flour and shaped into various balls, and then deep fried to make sweets. Based on texts such as *Charaka Samhita*, BN Mathur wrote that the earliest evidence of a heat-acid coagulated milk product in India can be traced to 75-300 CE, in the Kushan-Satavahana era. Sunil Kumar *et al*. interpret this product as the present-day paneer.
- Another theory is that like the word itself, Paneer originated in Persianate lands and spread to the Indian Subcontinent. Paneer, according to this theory was developed and molded to suit local tastes under these rulers.
- According to another theory, the Portuguese may have introduced the technique of "breaking" milk with acid to Bengal in the 17th century. Thus, according to this theory, Indian acid-set cheeses such as paneer and chhena were first prepared in Bengal, under Portuguese influence.

3. VARIETIES

There are only two variants are available now a days.

Milk paneer & Soya Paneer known as TOFU.

4. HEALTH BENEFITS AND NUTRITIONAL INFORMATION

- Cottage cheese is a dense source of protein" It depends upon the kind of milk from which the paneer is churned. If it is from full cream milk, it is high on fat too, in addition to being a protein dense food. Other than iron, almost all essential minerals like calcium and magnesium are present in cottage cheese." 100 grams of cottage cheese contains 11 gm of

protein, according to USDA. Cow's milk contains the highest amount of casein protein among various kinds of milk. Therefore cottage cheese derived out of cow's milk is one rich source of protein you can load up on. Another highlight of cottage cheese is that it does not require any cooking and can be consumed directly. A cube of raw paneer therefore makes for a powerhouse of protein.

- Cottage cheese is one of the best sources of calcium. Experts say that cottage cheese can fulfill 8% of the daily recommended value. 100 grams of cottage cheese has a whopping 83 grams of protein! Adequate calcium levels ensure healthy bones, teeth, healthy heart muscles and smooth nerve functioning too.

- Cottage cheese can help regulate blood sugar levels too. Cottage cheese is packed with magnesium which can not only check the untimely spikes but also ensure better heart health and immune system. The high protein component of paneer also helps slow release of sugar into the blood and prevents abrupt hike and decline in blood sugar levels.

- Cottage cheese can do wonders for your heart health too. *Paneer* contains potassium which has been known to play a key role in fluid balance of body. Your kidneys play a crucial role in managing your blood pressure by controlling the amount of fluid stored in your body. The idea is simple, the more the fluid, the more the pressure. Potassium not only helps regulate the ideal fluid balance but also negate the effects of too much salt. However one has to make sure that the paneer is not too salty.

- Cottage cheese can also aid digestion. Cottage cheese has decent amount of phosphorous which helps in digestion and excretion. The magnesium present in cottage cheese can also prevent constipation. Magnesium has a laxative effect. Which means it draws water into the stools, making them softer and easier to pass through the intestinal walls.

- Folate is a B-complex vitamin which is very essential for pregnant women. Folate helps fetal development in expecting mothers. Apart from this, folate plays a crucial part in red blood cells production too.

- The protein dense cheese can keep you satiated for long and keep the hunger pangs at bay. In addition to being rich in protein, *paneer* is also a rich source of conjugated linoleic acid. This fatty acid helps increasing the fat burning process in the body. All you weight-watchers, make sure you eat raw paneer to get effective results.

Paneer Nutrition :- Values per 100 gm.

Principle	Nutritient Value	% RDA
Energy	300 Kcal	15%
Carbohydrates	3 g	1%
Protein	15g	
Total Fat	25 g	32%
Cholesterol	80 mg	27%
Dietary Fiber	0 g	0%
Sugar	2.8 g	
Vitamins		
Vitamin A	285 µg	32 %
Electrolytes		
Sodium	566 mg	25%
Potassium	130 mg	3%

5. PROCESSING & VALUE ADDITION:-

- Traditional milk snacks are items of choice of millions in India. Among the milk based products, paneer occupies a prominent place as delicacy. The shelf life of paneer conventionally prepared from milk hardly exceed one week at ambient temperature. Considerable variations are observed in the textural and compositional properties of the paneer sold in the market. As the consequence of varying quality of raw material and techniques used in preparations. Hence, in view of the growing demands for paneer the methods for the manufacture, packaging and storage should be standardized. There is also a great need for developing, the sensory standard for the various traditional milk delicacies.

- **Spices** are used as a food additive or as a preservative that kills harmful bacteria or prevents their growth. These substances are also used for other purposes, such as medicine, religious rituals, cosmetics, perfumery or eating as vegetables. Spices (garlic, ginger, mint and cumin) may used as fresh and chopped into small pieces. These Spices are dried and often grated into powder. Small seeds, such as cumin seed are used both whole and in powder form.

- **Garlic** used as consumption (raw or cooked), and for medicinal purposes. It is highly nutritious spice and it contains Vitamin C, calcium, iron, phosphorus and fiber. Garlic is claimed to help prevent heart disease (including atherosclerosis, high cholesterol, and high blood pressure) and cancer. In addition, garlic is a good source of protein and thiamin (vitamin B1) as well as the minerals like phosphorous, selenium, calcium, potassium, iron and copper. Garlic has antibiotic and bactericidal effects. It is believed to promote cardiovascular activity and have a soothing effect on the respiratory system. Garlic has immune-enhancing allium compounds (daily sultides) that appear to increase the activity of immune cells that fight cancer and indirectly help break down cancer causing substances.

- **Ginger** is a spice which is used for cooking and is also consumed whole as a delicacy or medicine. It is used as a flavoring for cookies, crackers and cake, and is the main flavor of ginger is sweet, carbonated, non-alcoholic beverage. It is highly nutritious spices and it contains Vit.B and C, calcium, iron and phosphorus. Ginger is more effective for people suffering from gallstones and release bile from the gallbladder. Ginger may also decrease joint pain from arthritis and cholesterol lowering properties that may make it useful for treating heart disease. Ginger compounds are active against a form of diarrhea and nausea caused by seasickness, morning sickness and chemotherapy.

- **Mint** was originally used as a medicinal herb to treat stomach ache and chest pains, and it is commonly used in the form of tea as a home remedy to help alleviate stomach pain. Mint tea is a strong diuretic. Mint also aids digestion, in a way that it breaks down the fats. In recent years, it has been often recommended for treating Obesity.

- **Cumin** seeds contain a relatively large percentage amount of iron and calcium, vitamin A, B, C, E and K. Cumin seeds represent the second-most popular spice used all over the world, next only to black pepper. The seeds are scientifically called Cuminum cymium. They are known for giving a special flavor and aroma to the foods. They can be used in either whole or powdered form. Cumin seeds resemble caraway seeds and are yellow in color, with an oblong shape. There are several known health benefits of cumin seeds. They have antiseptic properties as well and are extremely helpful in treating colds, sore throats and fevers. The seeds are rich in iron and thus, form a healthy option for the menstruating, pregnant and lactating women, apart from growing children and adolescents. Besides, there are no known side effects of cumin. Cumin may stimulate the secretion of pancreatic enzymes, compounds necessary for proper digestion and nutrient assimilation and having anti-carcinogenic properties.

- **Value addition** of spices viz. ginger, garlic, mint, and cumin in the preparation of paneer improves the sensory attributes in terms of color and appearance, flavor and taste and over all acceptability as compared to plain paneer. Plain paneer is a rich source of protein and fat and very less in Vitamins, minerals, iron and crude fiber. Therefore spices (ginger, garlic, mint, and cumin) will be added in order to fortify with nutrient spices are rich source of Vitamins C and minerals like Calcium, phosphorus, iron and potassium. Spices (ginger and garlic) incorporated paneer can be used as a remedy for skin disease, cancer, lowering blood sugar and increase bone density. It also act as blood builder while hypertensive and diabetes patients should avoid eating plain paneer made from whole milk as it has high amount of fat, whereas spices incorporated paneer has many advantage over plain paneer as it can promote growth and development of the body. It also adds taste and flavors to food and gives a sense of satisfaction and fullness when eaten.

6. MANUFACTURING PROCESS OF THE INDIAN COTTAGE CHEESE

Whole Milk

↓

Standardization

↓

Heating to 85-90^{0}C

↓

Coagulation at 65 to70^0 C (By lactic or citric acid solution, or GDL)

↓

Coagulation

↓

Filtration of whey (Whey to whey Storage after chilling)

↓

Washing in cheese cloth bag and kneading

↓

Draining of whey and water

↓

Paneer

↓

Cutting & Packing

↓

Storage @ < 4°C

7. LOCATION OF THE 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 Paneer processing unit are in the production clusters of Milk Manufacturing states anywhere in India, where adequate quantities of surplus raw materials can be available for processing. The only matter to be taken care of is milk supply must be adequate & freshness is mandatory.

- However, multi Products processing unit with milk as one of the raw materials can be established.

8. MARKET DEMAND AND SUPPLY FOR INDIAN COTTAGE CHEESE & OTHER MILK PRODUCTS

- ✓ Approximately 8% of world milk production is traded internationally. This is primarily due to the perishability of milk and its high water content. However, imports of liquid milk by China from the European Union and New Zealand have increased considerably in recent years. China's net imports of fresh dairy products over the base period were about 0.7 Mt, and this is projected to increase over the projection period by 3.6% p.a. The trade share of WMP and SMP is high at more than 40% of world production, but these products are often produced only as a means to store and trade milk over a longer period or distance.

- ✓ The European Union will continue to be the main world cheese exporter, followed by the United States and New Zealand. It is projected that the European Union's share in world cheese exports will be around 44% by 2029, sustained by increased cheese exports to Canada via the CETA agreement and to Japan following the ratification of the bilateral trade agreement in 2019. The United Kingdom, the Russian Federation, Japan, the European Union, and Saudi Arabia are projected to be the top five cheese importers in

2029. These countries are often also exporters of cheese and international trade is expected to increase the choice of cheeses for consumers.

- ✓ New Zealand remains the primary source for butter and WMP on the international market, and its market shares are projected to be around 42% and 52%, respectively, by 2029. In the case of WMP, trade between New Zealand and China, the principle importer of WMP, is expected to be considerably less dynamic over the projection period. The expected growth in domestic milk production in China limits the growth in WMP imports. It is expected that New Zealand will diversify and slightly increase its production of cheese over the outlook period.

- ✓ Imports are spread more widely across countries, with the dominant destinations for all dairy products being the Middle East and North Africa (MENA), developed countries, South East Asia, and China. China is expected to continue to be the world's major dairy importer, particularly for WMP. Most of its dairy imports come from Oceania, although in recent years the European Union has increased its exports of butter and SMP to China. Imports by the Middle East and North Africa are expected to originate primarily from the European Union, while United States and Oceania are expected to be the main suppliers of milk powders to South East Asia. Developed countries import a high level of cheese and butter, around 54% and 39% respectively of world imports in 2017-19. These percentages are expected to decline slightly by 2029

9. MARKETING STRATEGY FOR COTTAGE CHEESE (PANEER)

- ✓ The increasing urbanization and income offers huge scope for marketing of milk based products. Urban organized platforms such as departmental stores, malls, super markets can be attractive platforms to sell well packaged and hygienic milk based products.

10. DETAILED PROJECT ASSUMPTIONS

- This model DPR for Indian cottage cheese (Paneer) manufacturing 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 unit by adding new paneer process line.

- 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 milk cost considered @ Rs. 40/- per kg.
  2. SMP Cost considered @ Rs. 280/- per kg.
  3. Citric acid cost is considered as 80/- per kg.
  4. Machinery cost may also vary from vendor to vendor.

- Land and civil infrastructures are assumed as already available with the entrepreneurs.

11. PROJECT START-UP COSTING SHEETS

Detailed Project Assumptions		
Parameter	Assumption	
Capacity of the Paneer Unit	150	MT/annum
Utilization of capacity	1st Year Implemetation, 55% in second, 65% in third and 75% in fourth year onwards	

Working days per year	300	days
Working hours per day	10	hours
Interest on term and working capital loan	12%	
Repayment period	Seven year with one year grace period is considered.	
Average prices of raw material	40	
Average sale prices per Kg	250	Rs/kg
Pulp extraction	N/A	
PANEER	1 Kg Paneer from 2 Kg milk	

Land and Building.

- Land and civil infrastructures are assumed as already available with the entrepreneurs.

Even though we have calculated as 660 Sq. Feet required if not available & Cost seems to be approx. **5.55 Lacs**.

Machinery and Equipment

Sr. No.	Machinery Descriptions	**Power required**	Area Require (Sq. Ft.)	Qtty.	Cost. Rs. (in Lacs)
1	Milk Storage Tanks	2KW	50	2	4
2	Milk heating kettle	1KW	16	1	1
3	Whey Storage Tank - Flat	N/A	45	1	0.7
4	Paneer Vats	N/A	45	2	0.25
5	Paneer Hoops	N/A	1	20	0.5
6	Paneer Block Dipping tank	N/A	15	1	0.6
7	SS Packing table	N/A	72	3	0.6
8	Vacuum Machine	N/A	7.5	1	1
9	Horizontal Packet sealer	1KW	2	1	0.25
10	Cold Room	0.5KW	72	1	4
11	Weighing balance	2KW	1	1	0.06

Other costs:-

Utilities and Fittings:-

Utilities and Fittings	
1. Water	Rs. 0.8 Lacs total
2. Power	

Other Fixed Assets:-

Other Fixed Assets	
1. Furniture & Fixtures	Rs. 0.9 lac total
2. Plastic tray capacity	
3. Electrical fittings	

Pre-operative expenses

Pre-operative Expenses	
Legal expenses, Start-up expenses, Establishment cost, consultancy fees, trials and others.	0.9 LAC
Total preoperative expenses	0.9 LAC

Contingency cost to be added as approx.1.2 Lac.

So total startup cost at own land & Premise may be somewhat similar to 17.26 lac. This is according to survey done at X location india. This may vary on location, situation and design change over.

Working capital requirement. (in Lacs)

		55%	65%	75%
Particulars	Period	Year 2	Year 3	Year 4
Raw material stock	2 days	1.52	1.80	2.46
Work in progress	5 days	3.05	3.60	4.91
Packing material	15 days	0.75	0.89	1.21
Finished goods' stock	5 days	12.60	14.90	20.31
Receivables	30 days	25.21	29.79	40.63
Working expenses	30 days	0.85	1.00	1.37
Total current assets		43.98	51.98	70.88
Trade creditors		0.00	0.00	0.00
Working capital gap		43.98	51.98	70.88
Margin money (25%)		11.00	13.00	17.72
Bank finance		32.99	38.99	53.16

12. INSTALLED CAPACITY OF THE PA PROCESSING UNIT

The maximum installed capacity of the Paneer manufacturing unit in the present model project is proposed as 150 tonns/annum or 500 kg/day raw strawberry. The unit is assumed to operate 300 days/annum @ 8-10 hrs/day. The 1st year is assumed to be construction/expansion period of the project; and in the 2nd year 55 percent capacity, 3rd year 65 percent capacity and 4th year onwards 75 percent capacity utilization is assumed in this model project.

Total Project Cost and Means of Finance (Rs. In Lakhs)

Particulars	Amount in Lakhs
i. Land and building (20 x 32 x 12 ft - LxBxH)	5.55
ii. Plant and machinery	13.46
iii. Utilities & Fittings	0.8
iv. Other Fixed assets	0.9

v. Pre-operative expenses	0.90
vi. Contingencies	1.20
vii. Working capital margin	11.00
Total project cost (i to vii)	33.81
Means Of finance	
i. Subsidy	10.00
ii. Promoters Contribution	8.05
iii. Term Loan (@10%)	15.89

Manpower Requirement				
Total Monthly Salary (Rs.)	No	Wages	Total Monthly	Annual Amount
Supervisor (can be the owner)	1	18000	18000	216000
Technician	1	14000	14000	168000
Semi skilled	2	7600	15200	182400
Helper	1	5500	5500	66000
Sales man	1	8000	8000	96000
		Total	**60700**	**728400**

14.EXPENDITURE, REVENUE & PROFITABILITY ANALYSIS.

		150	MT				
	Particulars	**1st Year**	**2nd Year**	**3rd Year**	**4 th Year**	**5th year**	**6th year**
A	Total Installed Capacity (MT)	1000 MT Milk/Annum	82.5	97.5	112.5	135	150
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%
B	**Expenditure (Rs. in Lakh)**	0					
	Milk (Av. Price @ Rs. 40/Kg)	0.00	12.54	14.81	17.09	20.51	22.79
	SMP @ Rs. 280/kg	0.00	10.97	12.96	14.96	17.95	19.94
	Other materials (Rs. 100/kg)	0.00	0.66	0.78	0.90	1.08	1.20
	Packaging materials (Rs 10 per Kg)	0.00	8.25	11.70	13.50	16.20	18.00
	Utilities (Electricity, Fuel)	0.00	0.81	0.96	1.11	1.33	1.48
	Salaries (1st yr only manager's salary)	2.16	7.28	7.28	7.28	7.28	7.28

	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90
	Insurance	0.30	0.30	0.30	0.30	0.30	0.30
	Miscellaneous expenses	0.50	2.30	2.30	2.30	2.30	2.30
	Total Expenditure	**2.96**	**43.81**	**51.90**	**58.34**	**67.86**	**74.20**
C	**Total Sales Revenue (Rs. in Lakh)**	**0.00**	**206.25**	**243.75**	**281.25**	**281.25**	**281.25**
	Sale of Paneer (Av. Sale Price @ Rs.250/kg)	0.00	206.25	243.75	281.25	281.25	281.25
D	**PBDIT (Total exp.-Total sales rev.) (Rs. in Lakh)/Cash Inflows**	**-2.96**	**162.44**	**191.85**	**222.91**	**213.39**	**207.05**
	Depreciation on civil works @ 5% per annum	0.28	0.26	0.25	0.24	0.23	0.21
	Depreciation on machinery @ 10% per annum	1.35	1.21	1.09	0.98	0.88	0.79
	Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05
	Interest on term loan @ 12%	1.65	1.60	1.53	1.46	1.38	1.30
	Interest on working capital @ 12%	0.00	3.96	3.96	3.96	3.96	3.96
E	Profit after depreciation and Interest (Rs. in Lakh)	**-6.36**	**159.27**	**188.89**	**220.15**	**210.84**	**204.69**
F	Tax (assumed 30%) (Rs. in Lakh)	**0.00**	**47.78**	**56.67**	**66.05**	**63.25**	**61.41**
G	Profit after depreciation, Interest & Tax (Rs. in Lakh)	**-6.36**	**111.49**	**132.22**	**154.11**	**147.59**	**143.28**
H	Surplus available for repayment (PBDIT-Interest on working capital-Tax) (Rs. in Lakh)	1.65	1.60	1.53	1.46	1.38	1.30
I	Coverage available (Rs. in Lakh)	1.65	1.60	1.53	1.46	1.38	1.30
J	Total Debt Outgo (Rs. in Lakh)	0.55	0.61	0.67	0.74	0.82	0.90
K	Debt Service Coverage Ratio (DSCR)	3.00	2.62	2.28	1.97	1.69	1.44
	Average DSCR	2.16					
L	Cash accruals (PBDIT- Interest-Tax) (Rs. in Lakh)	-4.61	113.06	133.65	155.40	148.76	144.35
M	Payback Period	2.5 Years					
	(on Rs. 30.10 Lakhs initial investment)						

15.REPAYMENT SCHEDULE

Year	Beginning	PMT	Interest	Principal	Ending Balance
1	1,588,888.05	220,409.25	165,244.36	55,164.89	1,533,723.16
2	1,533,723.16	220,409.25	159,507.21	60,902.04	1,472,821.12
3					

	1,472,821.12	220,409.25	153,173.40	67,235.86	1,405,585.26
4	1,405,585.26	220,409.25	146,180.87	74,228.39	1,331,356.87
5	1,331,356.87	220,409.25	138,461.11	81,948.14	1,249,408.74
6	1,249,408.74	220,409.25	129,938.51	90,470.74	1,158,937.99
7	1,158,937.99	220,409.25	120,529.55	99,879.70	1,059,058.29
8	1,059,058.29	220,409.25	110,142.06	110,267.19	948,791.10
9	948,791.10	220,409.25	98,674.27	121,734.98	827,056.12
10	827,056.12	220,409.25	86,013.84	134,395.42	692,660.71
11	692,660.71	220,409.25	72,036.71	148,372.54	544,288.17
12	544,288.17	220,409.25	56,605.97	163,803.28	380,484.89
13	380,484.89	220,409.25	39,570.43	180,838.82	199,646.06
14	199,646.06	220,409.25	20,763.19	199,646.06	(0.00)
		3,085,729.53	1,496,841.48	1,588,888.05	(1,588,888.05)

16.ASSETS' DEPRECIATION

Assets' Depreciation (Down Value Method)							Amounts in Lakhs	
Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year
Civil works	5.55	5.27	5.01	4.76	4.52	4.29	4.08	3.88
Depreciation	0.28	0.26	0.25	0.24	0.23	0.21	0.20	0.19
Depreciated value	5.27	5.01	4.76	4.52	4.29	4.08	3.88	3.68
Plant & Machinery	13.46	12.11	10.90	9.81	8.83	7.95	7.15	6.44
Depreciation	1.35	1.21	1.09	0.98	0.88	0.79	0.72	0.64

Depreciated value	12.11	10.90	9.81	8.83	7.95	7.15	6.44	5.79
Other Fixed Assets	0.80	0.68	0.58	0.49	0.42	0.35	0.30	0.26
Depreciation	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
Depreciated value	0.68	0.58	0.49	0.42	0.35	0.30	0.26	0.22
All Assets	19.81	18.07	16.49	15.06	13.77	12.60	11.53	10.57
Depreciation	1.74	1.58	1.43	1.29	1.17	1.06	0.96	0.88
Depreciated value	18.07	16.49	15.06	13.77	12.60	11.53	10.57	9.69

17.FINANCIAL ASSESSMENT OF THE PROJECT

Benefit Cost Ratio (BCR) and Net Present Worth (NPW)

Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year	
Capital cost (Rs. in Lakh)	33.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Recurring cost (Rs. in Lakh)	2.96	43.81	51.90	58.34	67.86	74.20	74.20	74.20	
Total cost (Rs. in Lakh)	36.77	43.81	51.90	58.34	67.86	74.20	74.20	74.20	481.27
Benefit (Rs. in Lakh)	0.00	206.25	243.75	281.25	281.25	281.25	281.25	281.25	
Total Depreciated value of all assets (Rs. in Lakh)								9.69	
Total benefits (Rs. in Lakh)	0.00	206.25	243.75	281.25	281.25	281.25	281.25	290.94	1865.94
Benefit-Cost Ratio (BCR): (Highly Profitable project)	**3.877**								
Net Present Worth (NPW):	1384.67								

18. BREAK-EVEN ANALYSIS

Sr. No.	Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%	100%	100%
	Production MT/Annum		82.5	97.5	112.5	135	150	150	150
A	Fixed Cost (Rs. in Lakh)								
	Permanent staff salaries	7.284	7.284	7.284	7.284	7.284	7.284	7.284	7.284
	Depreciation on building @ 5% per annum	0.28	0.26	0.25	0.24	0.23	0.21	0.20	0.19
	Depreciation on machinery @ 10% per annum	1.35	1.21	1.09	0.98	0.88	0.79	0.72	0.64
	Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
	Interest on term loan	1.65	1.60	1.53	1.46	1.38	1.30	1.21	1.10
	Insurance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total Fixed Cost (Rs. in Lakh)	**10.98**	**10.756**	**10.543**	**10.34**	**10.14**	**9.9462**	**9.754**	**9.5615**
B	**Sales Revenue (Rs. in Lakh)**	**0**	**206.25**	**243.75**	**281.3**	**281.25**	**281.25**	**281.3**	**281.25**
C	Variable Cost (Rs. in Lakh)								
	Milk(Av. Price @ Rs.40/Kg)	0.00	12.54	14.81	17.09	20.51	22.79	22.79	22.79
	SMP @ 280 per kg	0.00	10.97	12.96	14.96	17.95	19.94	19.94	19.94
	Other ingredients @100/Kg	0.00	0.66	0.78	0.90	1.08	1.20	1.20	1.20
	Packaging materials	0.00	8.25	9.75	11.25	13.50	15.00	15.00	15.00
	Casual staff salaries	0.00	5.78	5.78	5.78	5.78	5.78	5.78	5.78
	Utilities (Electricity, Fuel)	0.00	0.81	0.96	1.11	1.33	1.48	1.48	1.48
	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90	0.90	0.90
	Miscellaneous expenses	0.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00

	Interest on working capital @ 12%	0.00	3.96	3.96	3.96	3.96	3.96	3.96	3.96
	Total Variable Cost (Rs. in Lakh)	**0.50**	**45.67**	**51.81**	**57.95**	**67.01**	**73.06**	**73.06**	**73.06**
D	Break Even Point (BEP)								
	as % of sale	-	12.00	10.00	8.00	8.00	7.00	7.00	6.00
	Break Even Point (BEP) in terms of sales value (Rs. in Lakhs)	-	24.75	24.38	22.50	22.50	19.69	19.69	16.88

19 . RAW MATERIAL REQUIREMENTS FOR THE UNIT

- A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 280-300 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory.

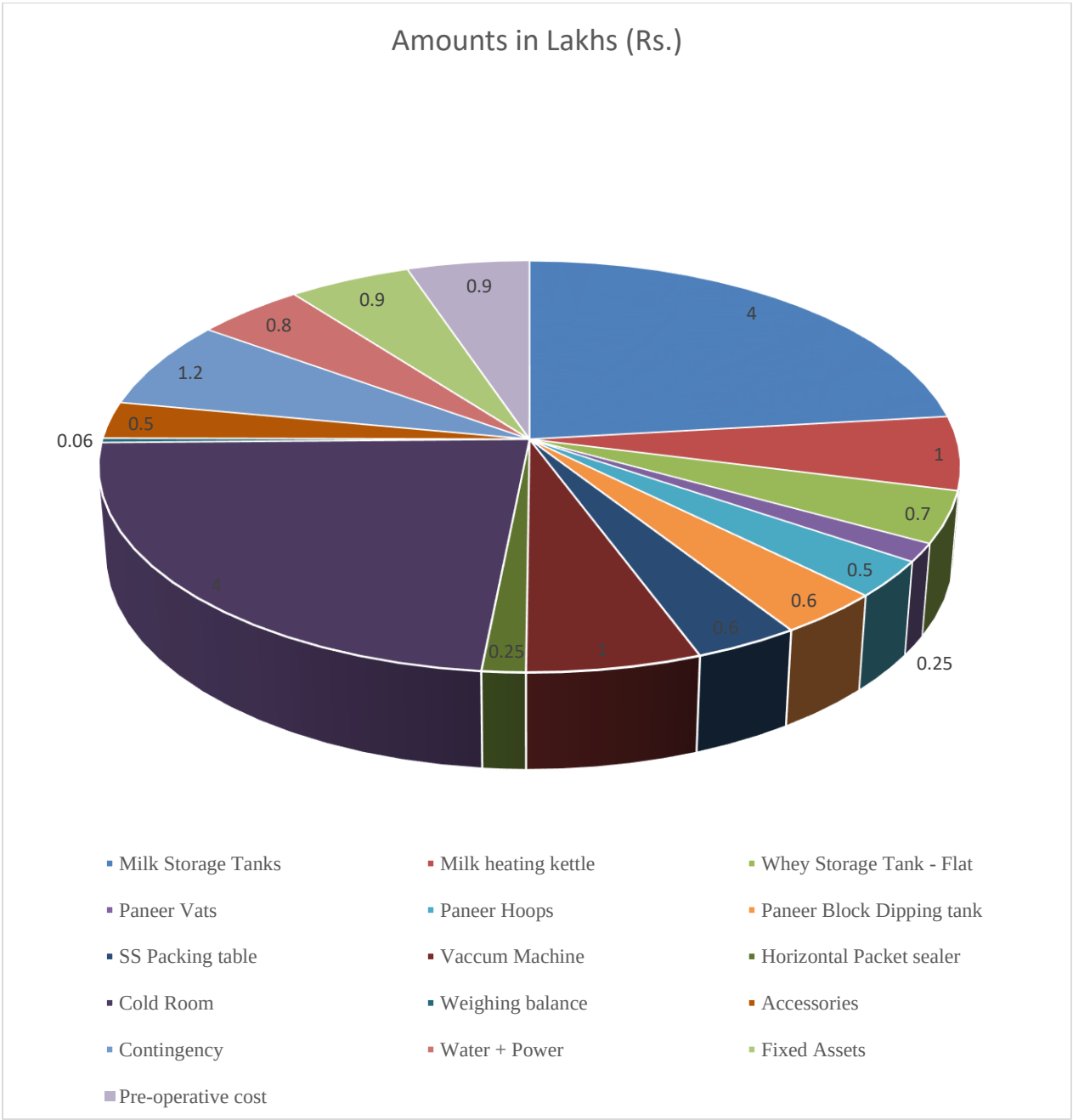
- The processor must have linkage with producer organizations preferably FPCs through legal contract to get adequate quantity and quality of raw materials which otherwise get spoiled.

- In the Paneer manufacturing project, the unit requires 550 kg/day, 650 kg/day and 750 kg/day raw milk at 55, 65 and 75 percent capacity utilization, respectively.

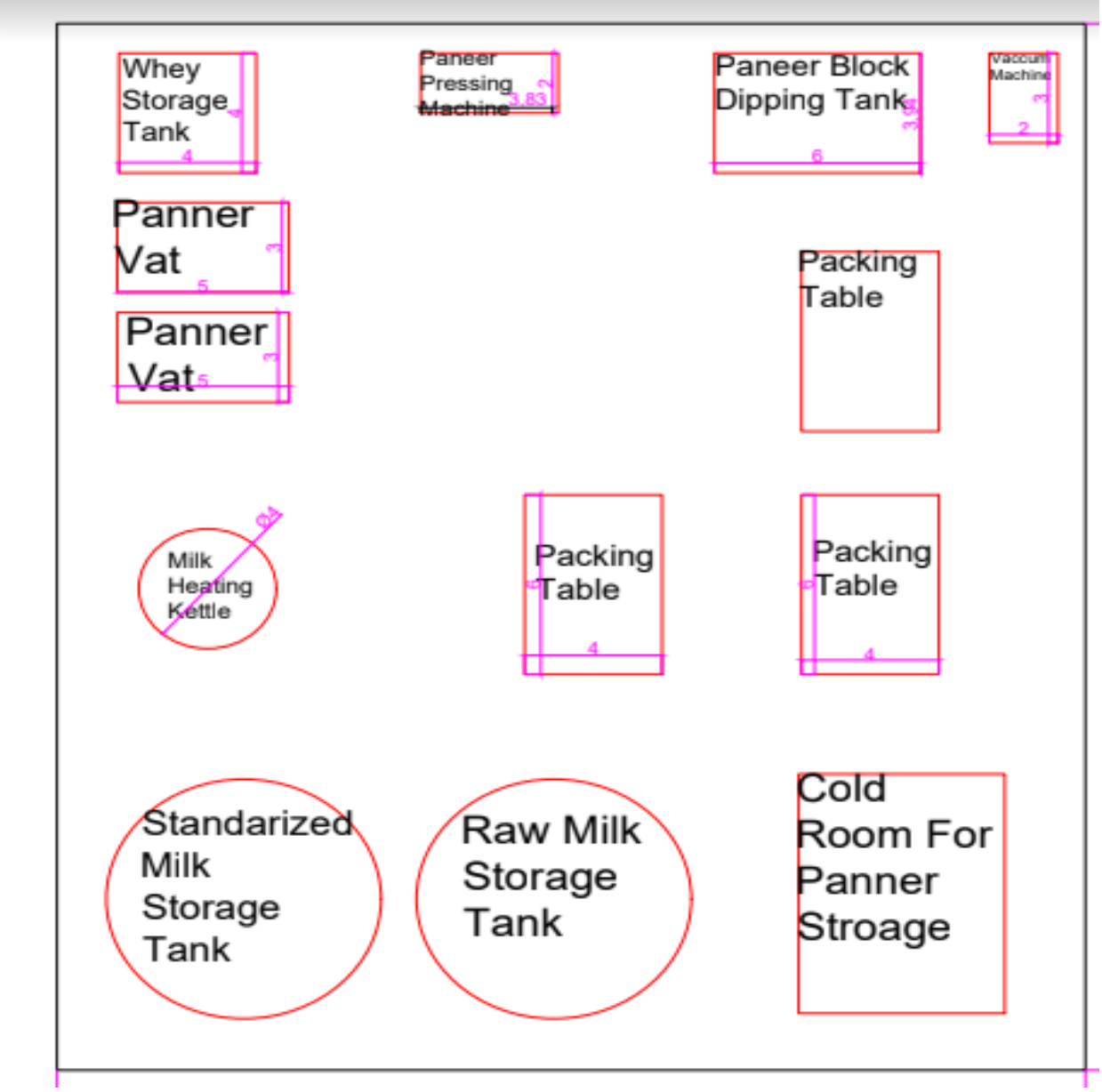
- If there are shortages in supply, then the entrepreneur can use WMP of other materials like analogue for same purpose to achieve maximum capacity utilization for higher economic efficiency.

- The animal must be mulched fully and the milk must be mixed thoroughly for elimination of taste related & Texture related unevenness of the product and then stored below 4°C temperature.

a. Pie chart for better understanding of each head expense.



20. TYPICAL PANEER MANUFACTURING UNIT LAYOUT



21.MACHINERY SUPPLIERS

There are many machinery suppliers available within India for fruits based beverage processing machineries and equipments. Some of the suppliers are:

1. Bajaj Processpack Limited, Noida, India
2. Shriyan Enterprises. Mumbai, India
3. Hind chef Machineries.

22. LIMITATIONS OF THE 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 crop output of current year, cost, 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.

23. GUIDELINES FOR THE ENTREPRENEURS

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.