



## **Model Detailed Project Report**

### **PASTA PROCESSING UNIT**

*Under the Formalization of Micro Food Processing Enterprises Scheme  
(Ministry of Food Processing Industries, Government of India)*



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## 1. The Project at a Glance

1. Name of the proposed project	:	Pasta Processing Unit
2. Name of the entrepreneur/FPO/SHG/Cooperative	:	
3. Nature of proposed project	:	Proprietorship/Company/Partnership
4. Registered office	:	
5. Project site/location	:	
6. Names of Partner (if partnership)	:	
7. No of share holders (if company/FPC)	:	
8. Technical advisor	:	
9. Marketing advisor/partners	:	
10. Proposed project capacity	:	150 MT/annum (70, 80 & 90% capacity utilization in the 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> years' onwards respectively)
11. Raw materials	:	Durum Wheat Semolina
12. Major product outputs	:	Pasta Products
13. Total project cost	:	Rs. 30 Lakhs
• Land development, building & civil construction	:	Rs. 2.00 Lakhs
• Machinery and equipments	:	Rs. 18 Lakhs
• Utilities (Power & water facilities)	:	Rs. 3.00 Lakhs
• Miscellaneous fixed assets	:	Rs. 1 Lakh
• Pre-operative expenses	:	Rs. 0.59 Lakhs
• Contingencies	:	Rs. 2.00 Lakhs
• Working capital margin	:	Rs. 3.41 Lakhs
14. Working capital requirement		
• 2 <sup>nd</sup> year		Rs. 10.24 Lakhs
• 3 <sup>rd</sup> year		Rs. 11.70 Lakhs
• 4 <sup>th</sup> year		Rs. 13.16 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	:	2.33:1
17. Profit after Depreciation, Interest & Tax		
• 2 <sup>nd</sup> year	:	Rs. 36.30 Lakhs
• 3 <sup>rd</sup> year	:	Rs. 43.48 Lakhs
• 4 <sup>th</sup> year	:	Rs. 50.62 Lakhs
18. Average DSCR	:	15.22
19. Benefit-Cost Ratio	:	1.58
20. Term loan repayment	:	7 Years with 1 year grace period
21. Payback period for investment	:	2 Years

## 2. General Overview of Pasta Production and Value Addition

### 2.1. Introduction

Pasta refers to the staple food of traditional Italian cuisine made using dough, water, eggs, vegetables, and oil. The dough is kneaded into various shapes, some of which are known as penne, spaghetti, farfalle, fettuccine, barbina, etc. Pasta is associated with several health benefits owing to a high concentration of vitamins and minerals. Currently, the demand for pasta is gaining immense popularity in India, particularly amongst the younger population, due to expansion in food-service restaurants.

The primary factors catalysing the growth of the pasta market in India include rising urbanisation, changing lifestyles and surging demand for ready-to-eat products. In addition to this, the market is also influenced by an increasing women employment rate coupled with rising disposable incomes. Further, the health-conscious consumers are demanding food products with healthier ingredients, which has led to a rise in the demand for pasta made with whole-wheat and quinoa. Some of the other forces that have been proactive in maintaining the market growth are longer shelf-life and ease of preparation. Pasta continues to increase in popularity. Highly rated for its nutritional value, pasta is an ideal meal for people who are paying more attention to their dietary intake. In addition, people are finding less time to prepare meals, and pasta is easily made.

Pasta manufacturers are responding to this demand by introducing a wide variety of dried and fresh pastas. One recent innovation is no-boil pasta that is partially cooked at the plant, making this already easy-to-prepare food even simpler to bring to the table at mealtime.

Therefore, processing of Pasta especially offers huge scope for entrepreneurship development at micro or small scale level through government schemes such as PM-Formalization of Micro Food Processing Enterprises Scheme of MoFPI, Government of India.

## **2.2. Varieties of Pasta**

Different types of pasta categorized according to their shapes and size.

### **a. Long and Medium Length Pasta**

#### **Spaghetti**

Spaghetti is the plural form of the Italian term Spaghetto, derived from Spago. Spago means 'thin string'. It is a long and thin type of pasta, made of semolina or flour and water. Spaghetti is one of the most commonly used pasta in the world. According to some theories, spaghetti was originated in China and was imported to Venice by Marco Polo, a popular traveller. These long, thin and round-shaped noodles are commonly served with a wide range of sauces, vegetables, meats and exotic sauces, like marinara sauce. Carbonara is one of the most famous dishes made of Spaghetti pasta.

#### **Bucatini**

This pasta is a thicker version of spaghetti with a hole running through the middle. The shape of this pasta is like a thinner version of straw. The name of this pasta is derived from the Italian word 'buco' or 'bucato' meaning 'hole' or 'pierced'. It was originated in the Italian region of Naples, Liguria and Lazio. Bucatini is served with savoury food items like pancetta, cured meat, cheese eggs, anchovies, and sardines. The best way to have Bucatini is to blend it with a buttery sauce.

#### **Pappardelle**

Pappardelle is large, very broad, flat pasta noodles originating from the central-southern region of Tuscany in Italy. This ribbon-shaped pasta is cut into very broad strips. The freshly made are 2-3 centimeters wide and have fluted edges. The dried ones have straight sides. Pappardelle is among the types of pasta that taste best with a wide range of sauces, from meat to shellfish to vegetables, like artichokes, fava beans and prosciutto.

## **Fettuccini**

This super popular pasta is mostly used in Rome. It is a long, flat, ribbon-like pasta with decent thickness, usually measuring 10 inches long and ¼th of an inch wide. The best recipe of fettuccine includes Cherry tomatoes, bell peppers and creamy Alfredo sauce.

## **Tonnarelli**

Tonnarelli is known as the Roman version of spaghetti allachitarra from the Abruzzo region. It's because Tonnarelli is made pretty much the same as spaghetti allachitarra. You can use the same fresh pasta dough recipe, roll the dough sheet about the same thickness, and cut the pasta dough using a tool with strings called a chitarra. You can also use a straight rolling pin for cutting the dough, and it will pretty much give you the same results. So, tonnarelli and spaghetti allachitarra are the same pasta, only with dissimilar names, depending on where you are. If you're in Abruzzo, you name it spaghetti allachitarra, but if you're in Roma, you call it tonnarelli.

## **b. Short Cut Pasta**

### **Farfalle**

Farfalle is commonly known as bow-tie pasta or butterfly pasta. The name is derived from the Italian word farfalle meaning butterflies. This type of pasta dates back to the 16th century in the Lombardy region of Northern Italy. It commonly used in dishes with light sauces or salads.

### **Penne**

The penne pasta originated in 1865 when a pasta maker from San Martino d'Albaro (Genoa), Giovanni Battista Capurro, made it on certain demand. It is small cylindrical shaped pasta which is cut into a pen shape without crushing it. Penne pasta is one of the ten most popular types of pasta in the world. It is often stuffed with various fillings and served in tomato or cream sauce.

## **Maccheroni**

Also known as macaroni, it is perhaps one of the most popular pasta styles in the world. It originated in northern and central Italy and is shaped like a small, slightly curved, tubular shape that makes it very flexible to use. Maccheroni is commonly used in baked pasta dishes, soups, or tossed with cheese (Did we say Mac and Cheese) or vegetable sauces.

## **Conchiglie**

The name is derived from the Italian word ‘conchiglia’, meaning seashell, it is a small, seashell-shaped pasta which is popular around the world. This type of pasta is specially designed to hold more sauce. Conchiglie is commonly used in soups, salads and main dishes.

### **c. Pasta with Filling**

## **Ravioli**

This uber-popular pasta was originated in the Lombardy region in Rome. The shape of the Ravioli is square with ruffled edges. It is often stuffed with various fillings like meat, cheese, vegetables and seafood.

## **Tortellini**

It is ring-shaped pasta, also described as navel-shaped. Therefore, it is also called as navel button pasta. Originating from the Emilia region of Italy, tortellini is often stuffed with a combination of meat (prosciutto, pork, etc.) and/or cheese.

## **Lumache**

It is small, snail-shaped pasta shells with one closed end to hold the sauce better. They find their roots in Sicily and are usually enjoyed with slightly heavier, chunkier sauces.



## Mezzelune

Mezzelune is also known as half-moon pasta. It is stuffed with Bitto cheese, eggs, milk, and white pepper. Originated in Tyrol in northern Italy, it is normally served with a sauce comprised of porcini mushrooms, white wine and sweet butter.

## d. Soup Pasta

### Ditalini

Originally hailing from Naples, ditalini means ‘small thimbles’. It is cut into tubes that are similar to the size of a kernel of corn, and it is also called “short macaroni” due to its smaller size. Ditalini is usually served with ricotta cheese or broccoli and is best for use in soups.

### Pastina

The name literally means ‘tiny dough’ in English. Also known by the name Acini Di Pepe, this type of pasta is so small that it looks like tiny grains. It takes around 4 to 9 minutes to cook this pasta. Pastina is commonly used in soups, salads.





### **2.3. Nutritional Value of Pasta**

Pasta is rich in nutrition and per 100 gram

- Calorie 196 calories
- 77.04 g of moisture
- 7.19 g of protein
- 1.15 g of total fat
- 0.33 g of ash
- 38.27 g of carbohydrate
- 2.2 g of total dietary fibre
- 0.69 g of total sugars
- 0.11 g of sucrose
- 0.05 g of glucose
- 0.04 g of fructose
- 0.5 g of maltose
- 32.25 g of starch
- 9 mg of calcium
- 1.59 mg of iron
- 22 mg of magnesium
- 72 mg of phosphorus
- 55 mg of potassium
- 1 mg of zinc
- 0.63 mg of copper
- 0.399 mg of manganese
- 32.7 µg of selenium
- 8.7 µg of fluoride

### **2.4. Processing and Value Addition of Pasta**

## **Processing**

### ***Raw materials***

There are six classes of wheat i.e. Hard Red Spring, Hard Red Winter, Soft Red Winter, Durum, Hard White and Soft White. Each class has its own characteristics and recommended use. For example, Soft Red Winter Wheat is associated with low protein content, low water absorption, and is recommended for cakes and pastries. Durum is the only wheat that has all the necessary qualities required to make pasta.

Durum wheat produces kernels much harder than all other wheat. Durum is also the only wheat that has yellow pigments distributed throughout the entire endosperm rather than only the outer layers of the kernel. This means that milled durum produces yellow, granular semolina while all other wheat produce white, powdery flour. The gluten (wheat protein) found in durum is much more pliable than gluten in other wheat which leads to easier extrusion. Durum also has lower water absorption, an important factor in the pasta drying process. Pasta products made from durum hold their shape better and have a firmer texture when cook

### ***Kernel structure and milling***

A kernel of durum wheat has three components. The bran, or outer layers, constitutes 12 – 15 per cent of the kernel and is high in fibre and ash. The germ is the embryo of the plant. This is three to five per cent of the kernel and contains most of the lipids and other nutrients needed to uphold germination. The endosperm is 80 – 85 per cent of the kernel, and contains high amounts of starch and gluten.

## **Value addition in pasta**

New lines of

- Fat- and cholesterol-free ravioli.
- Organically-grown pasta products.
- Wheat free pasta
- Millet pasta

## 3. Model Small Scale Pasta Processing Unit under PM-FME Scheme

### 3.1. Introduction

Pasta products are becoming popular in current lifestyle because they are healthy, tasty and convenient for transportation and preparation. Pastas, in general, are considered to have low glycemic indexes and, correspondingly, produce low postprandial blood glucose and insulin responses. Approximately 12.3 million tons of pasta is produced worldwide with an estimate of 100,000 tons production of India. Among cereals, only wheat is usually considered suitable for pasta manufacture. This is because their proteins have the properties required for interaction between themselves and with other components, mainly lipids, to form a very specific viscoelastic lipoprotein complex called gluten when flour (or semolina) and water are mixed together. Pasta, with legumes, vegetables and herbs, is considered a complete, delicious and healthy food. Pasta made from durum semolina maintains a desirable firm texture during cooking, and it has a natural amber colour that is associated with good quality pasta.

The Central Sector scheme for Formalization of Micro Enterprises in food processing sector under Ministry of Food Processing Industries is an important scheme useful for formalization and mainstreaming the unorganized home based or micro food processing units. The scheme is useful for expansion of the existing units in terms of capacity and technology through installation of new machineries and additional civil infrastructures. A detailed account of the model **Pasta Processing DPR** prepared on the basis of certain generalized assumptions is discussed in the sequent sections. *An entrepreneur can use this model DPR template and modify according to his/her need in terms of capacity, location, raw materials availability etc.*

### 3.2. Form of the Business Enterprise

The entrepreneur concerned must specify about the form of his/her business organization i.e. whether Sole Proprietorship, Cooperative, FPO/FPC, SHG Federation, Partnership Firm or Company and accordingly attach all the required documents. The documents may be registration

certificate, share holding pattern, loan approval certificate etc as specified in the FME scheme guidelines.

### **3.3. Background of the Promoters/Owners and Required Documents**

The detailed bio-data of promoter/promoters inter-alia name, fathers name, age, qualification, business experience, training obtained, contact number, email, office address, permanent address, share holding pattern, definite sources of meeting the commitment of promoters contribution, details of others business along with certified balance sheet and profit loss account for the last 3-4 years, tax registration, PAN number, income tax return etc for 3-4 years and other requirements as specified in the FME guidelines must be provided with the DPR.

### **3.4. Background of the Proposed Project**

The entrepreneur must specify whether it is a new project or expansion of the existing project. If new project is proposed then the reason to go in to the project and if expansion of the existing project, the must specify what kind of expansion is proposed in terms of capacity, product, machines, civil infrastructure etc.

### **3.5. 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 entrepreneur must mention whether project is proposed in self owned land or rented/allotted land in any industrial park or private location. Accordingly, he/she must provide ownership document, allotment letter/ lease deed. Land clearance certificate must be from village authority/municipality or any other concerned authority. *The locations for establishment of pasta processing unit can be anywhere provided the raw materials are easily available and consumption demand exists.*

### **3.6. Installed Capacity of the Pasta Processing Unit**

The maximum installed capacity of the pasta processing unit in the present model project is proposed as 150 tonns/annum pasta products. The unit is assumed to operate 300 days/annum @ 8-10 hrs/day. The 1<sup>st</sup> year is assumed to be construction/expansion period of the project; and in the 2<sup>nd</sup> year 70 percent capacity, 3<sup>rd</sup> year 80 percent capacity and 4<sup>th</sup> year onwards 90 percent capacity utilization is assumed in this model project.

### **3.7. 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 raw material suppliers to get adequate quantity and quality of raw materials. In the current model pasta processing project, the unit requires 350 kg/day, 400 kg/day and 450 kg/day pasta products at 70, 80 and 90 percent capacity utilization, respectively.

### **3.8. Product Profile of the Unit**

In the present model pasta processing unit, the targeted product output is Pasta. However, by putting different dice vermicelli can also be prepared.

### **3.9. Manufacturing Process of Pasta**

#### ***Raw Materials***

Pasta products contain milled wheat, water, and occasionally eggs and/or optional ingredients. Pasta manufacturers typically use milled durum wheat (semolina, durum granulars, and durum flour) in pasta production, although farina and flour from common wheat are occasionally used. Most pasta manufacturers prefer semolina, which consists of fine particles of uniform size and produces the highest quality pasta product. The water used in pasta production should be pure,

free from off flavors and suitable for drinking. Also, since pasta is produced below pasteurization temperatures, water should be used of low bacterial count. Eggs (fresh eggs, frozen eggs, dry eggs, egg yolks, or dried egg solids) are added to pasta to make egg noodles or egg spaghetti and to improve the nutritional quality and richness of the pasta. Small amounts of optional ingredients, such as salt, celery, garlic, and bay leaves, may also be added to pasta to enhance flavor. Disodium phosphate may be used to shorten cooking time. Other ingredients, such as gum gluten, glycerylmonostearate, and egg whites, may also be added. All optional ingredients must be clearly labeled on the package.

### ***Wheat Milling***

Durum wheat is milled into semolina, durum granular, or durum flour using roll mills. Semolina milling is unique in that the objective is to prepare granular middlings with a minimum of flour production. Grain milling is discussed in AP-42 Section 9.9.1, Grain Elevators and Processes. After the wheat is milled, it is mixed with water, eggs, and any other optional ingredients.

### ***Mixing***

In the mixing operation, water is added to the milled wheat in a mixing trough to produce dough with a moisture content of approximately 31 percent. Eggs and any optional ingredients may also be added. Most modern pasta presses are equipped with a vacuum chamber to remove air bubbles from the pasta before extruding. If the air is not removed prior to extruding, small bubbles will form in the pasta which diminish the mechanical strength and give the finished product a white, chalky appearance.

### ***Extruding***

After the dough is mixed, it is transferred to the extruder. The extrusion auger not only forces the dough through the die, but it also kneads the dough into a homogeneous mass, controls the rate of production, and influences the overall quality of the finished product. Although construction and dimension of extrusion augers vary by equipment manufacturers, most modern presses have

sharpedged augers that have a uniform pitch over their entire length. The auger fits into a grooved extrusion barrel, which helps the dough move forward and reduces friction between the auger and the inside of the barrel. Extrusion barrels are equipped with a water cooling jacket to dissipate the heat generated during the extrusion process. The cooling jacket also helps to maintain a constant extrusion temperature, which should be approximately 51°C (124°F).

### ***Drying***

Drying is the most difficult and critical step to control in the pasta production process. The objective of drying is to lower the moisture content of the pasta from approximately 31 percent to 12 to 13 percent so that the finished product will be hard, retain its shape, and store without spoiling. Most pasta drying operations use a preliminary drier immediately after extrusion to prevent the pasta from sticking together. Pre-drying hardens the outside surface of the pasta while keeping the inside soft and plastic. A final drier is then used to remove most of the moisture from the product.

### ***Packaging***

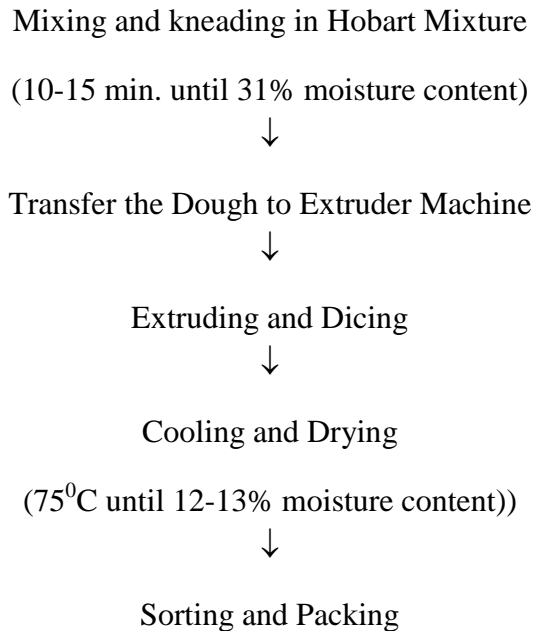
Packaging keeps the product free from contamination, protects the pasta from damage during shipment and storage, and displays the product favorably. The principal packaging material for noodles is the cellophane bag, which provides moisture-proof protection for the product and is used easily on automatic packaging machines, but is difficult to stack on grocery shelves. Many manufacturers utilize boxes instead of bags to package pasta because boxes are easy to stack, provide good protection for fragile pasta products, and offer the opportunity to print advertising that is easier to read than on bags.

### Ingredients

(Durum Wheat Semolina, Water, with or without egg and additives)







### **3. 10. Technology Accessibility**

IIFPT and its liaison offices at Guwahati and Bhatinda have all the technical knowhow on pasta processing. These technologies are available through training, incubation and consultancy. The entrepreneur can first avail training or consultancy and then undergo business incubation before venturing into the business. Other than IIFPT, NIFTEM, CFTRI and other institutes also have the technical knowledge and training facilities.

### **3.11. Market Demand and Supply for Pasta**

Currently, the demand for pasta is gaining immense popularity in India, particularly amongst the younger population, due to expansion in food-service restaurants. The pasta market in India reached a sales value of US\$ 335.4 Million in 2018, exhibiting a CAGR of 17.1% during 2011-2018. Looking forward, the market value is projected to reach US\$ 821.9 Million by 2024, registering a CAGR of 16% during 2019-2024. The primary factors catalysing the growth of the pasta market in India include rising urbanisation, changing lifestyles and surging demand for ready-to-eat products. In addition to this, the market is also influenced by an increasing women employment rate coupled with rising disposable incomes. Further, the health-conscious consumers are demanding food products with healthier ingredients, which has led to a rise in the

demand for pasta made with whole-wheat and quinoa. Some of the other forces that have been proactive in maintaining the market growth are longer shelf-life and ease of preparation. On the basis of type, the market has been segmented as dry pasta, instant pasta and fresh pasta. Currently, dry pasta dominates the Indian pasta market, holding the majority of the market share. Based on raw materials, semolina represents the largest segment, followed by refined flour and durum wheat. This can be accredited to the high gluten content of semolina which helps in maintaining the shape of pasta.

### 3.12. Marketing Strategy for Pasta

The increasing urbanization and income offers huge scope for marketing of pasta products. Urban organized platforms such as departmental stores, malls, super markets can be attractive platforms to sell well packaged and branded pasta products. Processors can also have tie-up with hotels and restaurants for supply.

### 3.13. Detailed Project Assumptions

This model DPR for pasta processing unit is basically prepared as a template based on certain assumptions (Table 1) 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 Table 1. This DPR assumes expansion of existing unit by adding new pasta processing line. Therefore, land and civil infrastructures are assumed as already available with the entrepreneur.

<b>Table 1: Detailed Project Assumptions</b>	
<b>Parameter</b>	<b>Value Assumed</b>
Capacity of the pasta processing unit	: 150 MT/annum Pasta products
Utilization of capacity	: 1 <sup>st</sup> year implementation, 70% in 2 <sup>nd</sup> year, 80% in 3 <sup>rd</sup> year and 90% in 4 <sup>th</sup> year onwards.
Working days per year	: 300 days
Working hours per day	: 8-10 hrs.
Interest on term and working capital loan	: 12%
Repayment period	: Seven years with one year grace period is considered.

Average prices of raw material	:	Rs. 60/Kg Durum Wheat Semolina
Average sale prices	:	Rs. 130/Kg Pasta
Recovery rate	:	95% output from raw material.

### 3.14. Fixed Capital Investment

#### 3.14.A. Land & Building

The DPR is for FME scheme to upgrade/formalize existing micro enterprises which already has land & built-up area. However, they can invest to expand the built-up area (Table 2) as required.

<b>Table 2: Land and Civil Infrastructures</b>	
i. Land 10000Sqft	Assumed land already developed and has 2000sq m built in area. So additional 1000 sqft can be built in @ Rs. 200/sqft
ii. Built-up processing area 2000sqft	
iii. Storage area 1000sqft	
<b>Total</b>	<b>Rs. 2.00 Lakhs</b>

#### 3.14.B. Machinery & Equipment: Rs. 18 Lakhs

<b>Table 3: Machinery &amp; Equipment</b>					
S.No	Descriptions	Power required	Area required (Sq.ft)	Qty	Amount (Rs.) in lakhs
1.	Blender/Mixer Capacity : 100 kg /hr	2 HP	16	1	3.00
2.	Cold Extruder Capacity : 100 kg /hr	10 HP	25	1	5.00
3.	Cooking Chamber Capacity : 50 kg /hr	2 HP	25	1	3.00
4.	Dryer Capacity 200 kg	10 KW	100	1	3.00
5.	Pillow Packing Machine Capacity : 25 kg /hr	4 HP	25	1	4.00

#### 3.14.C. Utilities and Fittings

<b>Table 4: Utilities and Fittings</b>	
i. Power	Rs. 3.00 Lakhs
ii. Water	

### 3.14.D. Other Fixed Assets

<b>Table 5: Other Fixed Assets</b>	
i. Furniture and Fixtures	Rs. 1 Lakh
ii. Plastic trays capacity	
iii. Electrical fittings	

### 3.14.E. Pre-operative Expenses

<b>Table 6: Pre-operative Expenses</b>	
Legal expenses, start-up expenses, establishment cost, consultancy fee, trial runs, & others	Rs.59000
<b>Total Pre-operative Expenses</b>	<b>Rs.59000</b>

### 3.14.F. Total Fixed Capital Investment

Total Fixed Capital Investment = (Land & Building + Machinery & Equipment+ Utilities and Fittings + Other Fixed Assets + Pre-operative Expenses) = Rs. (2+18+3+1+0.59) Lakhs= Rs.24.59 Lakhs

### 3.15. Working Capital Requirement

Working capital is important for pasta processing unit and need to maintain adequate inventories.

<b>Table7: Working Capital Requirement (Rs. in Lakh)</b>				
Particulars	Period	Year 2 (70%-105 MT)	Year 3(80%-120 MT)	Year 4(90%-135 MT)
Raw material stock	7 days	1.47	1.68	1.89
Work in progress	15 days	1.57	1.80	2.02
Packing material	15 days	0.16	0.18	0.21
Finished goods' stock	15 days	3.15	3.60	4.05
Receivables	30 days	6.30	7.20	8.10
Working expenses	30 days	1.00	1.14	1.28
Total current		13.65	15.6	17.55

assets				
Trade creditors		0	0	0
Working capital gap		13.65	15.6	17.55
Margin money (25%)		3.41	3.90	4.39
Bank finance		10.24	11.70	13.16

### 3.16. Total Project Cost and Means of Finance

<b>Table 8: Total Project Cost and Means of Finance(Rs. in Lakhs)</b>	
<b>Particulars</b>	<b>Amount</b>
i. Land and building	2.00
ii. Plant and machinery	18.00
iii. Utilities& Fittings	3.00
iv. Other Fixed assets	1.00
v. Pre-operative expenses	0.59
vi. Contingencies	2.00
vii. Working capital margin	3.41
<b>Total project cost (i to vii)</b>	<b>30</b>
<b>Means of finance</b>	
i. Subsidy	10
ii. Promoter's contribution	6
iii. Term loan	14

### 3.17. Manpower Requirement

<b>Table 9: Manpower Requirement</b>		
<b>Particulars</b>	<b>No. &amp; Wage</b>	<b>Total Monthly Salary (Rs.)</b>
i. Manager (can be the owner )	1 @ Rs. 20000	20000
ii. Skilled worker	2 @ Rs. 10000	20000
iii. Semi skilled	2 @ Rs. 7500	15000
iv. Helper	1 @ Rs. 5000	5000
v. Sales man	1 @ Rs. 7500	7500
<b>Total</b>	<b>7 persons</b>	<b>Rs. 67500/- per month</b>

Note: Manager, two skilled workers are permanent staffs only (Salary Rs. 40000/month). Others are causal staffs.

### 3.18. Expenditure, Revenue and Profitability Analysis

<b>Table 10: Expenditure, Revenue and Profitability Analysis</b>									
	<b>Particulars</b>	<b>1<sup>st</sup> Year</b>	<b>2<sup>nd</sup> Year</b>	<b>3<sup>rd</sup> Year</b>	<b>4<sup>th</sup> Year</b>	<b>5<sup>th</sup> Year</b>	<b>6<sup>th</sup> Year</b>	<b>7<sup>th</sup> Year</b>	<b>8<sup>th</sup> Year</b>
<b>A</b>	<b>Total Installed Capacity</b>	150 MT/Year Pasta Products							
	Capacity utilization (%)	Under const. (0%)	105 MT (70 %)	120 MT (80 %)	135 MT (90 %)	135 MT (90 %)	135 MT (90 %)	135 MT (90 %)	135 MT (90 %)
<b>B</b>	<b>Expenditure (Rs. in Lakh)</b>								
	Durum wheat samolina (Av. Price @ Rs. 30/Kg )	0.00	63.00	72.00	81.00	81.00	81.00	81.00	81.00
	Packaging materials @ Rs. 3/Package	0.00	3.15	3.60	4.05	4.05	4.05	4.05	4.05
	Utilities (Electricity, Fuel)	0.00	3.60	4.11	4.63	4.63	4.63	4.63	4.63
	Salaries (1 <sup>st</sup> yr only manager's salary)	2.40	8.10	8.10	8.10	8.10	8.10	8.10	8.10
	Repair & maintenance	0.00	0.50	0.57	0.64	0.64	0.64	0.64	0.64
	Insurance	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	Miscellaneous expenses	0.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	<b>Total Expenditure</b>	<b>3.2</b>	<b>80.65</b>	<b>90.68</b>	<b>100.72</b>	<b>100.72</b>	<b>100.72</b>	<b>100.72</b>	<b>100.72</b>
<b>C</b>	<b>Total Sales Revenue (Rs. in Lakh)</b>	0.00	129.67	148.20	166.72	166.72	166.72	166.72	166.72
	Sale of Pasta @ Rs. 130/Kg assuming output rate 95%)	0.00	129.67	148.20	166.72	166.72	166.72	166.72	166.72
<b>D</b>	<b>PBDIT (Total exp.-Total sales rev.) (Rs. in Lakh)/Cash Inflows</b>	<b>-3.20</b>	<b>49.02</b>	<b>57.52</b>	<b>66.00</b>	<b>66.00</b>	<b>66.00</b>	<b>66.00</b>	<b>66.00</b>
	Depreciation on civil works @ 5% per annum	0.10	0.09	0.09	0.09	0.08	0.07	0.07	0.07
	Depreciation on machinery @ 10% per annum	1.80	1.62	1.46	1.31	1.18	1.06	0.96	0.86
	Depreciation on other fixed assets @ 15% per annum	0.15	0.13	0.11	0.09	0.08	0.07	0.05	0.05
	Interest on term loan @ 12%	1.68	1.68	1.44	1.20	0.96	0.72	0.48	0.24
	Interest on working capital @ 12%	0.00	1.23	1.40	1.58	1.58	1.58	1.58	1.58
<b>E</b>	<b>Profit after depreciation and Interest (Rs. in Lakh)</b>	<b>-6.93</b>	<b>44.27</b>	<b>53.02</b>	<b>61.73</b>	<b>62.12</b>	<b>62.50</b>	<b>62.86</b>	<b>63.20</b>
<b>F</b>	Tax (assumed 18%) (Rs. in Lakh)	0.00	7.97	9.54	11.11	11.18	11.25	11.31	11.38
<b>G</b>	<b>Profit after depreciation, Interest &amp; Tax (Rs. in Lakh)</b>	<b>-6.93</b>	<b>36.30</b>	<b>43.48</b>	<b>50.62</b>	<b>50.94</b>	<b>51.25</b>	<b>51.55</b>	<b>51.82</b>
<b>H</b>	Surplus available for repayment (PBDIT-Interest on working capital-Tax) (Rs. in Lakh)	-3.20	39.82	46.58	53.31	53.24	53.17	53.11	53.04

<b>I</b>	Coverage available (Rs. in Lakh)	-3.20	39.82	46.58	53.31	53.24	53.17	53.11	53.04
<b>J</b>	Total Debt Outgo (Rs. in Lakh)	1.68	3.68	3.44	3.20	2.96	2.72	2.48	2.24
<b>K</b>	<b>Debt Service Coverage Ratio (DSCR)</b>	-1.90	10.82	13.54	16.66	17.99	19.55	21.42	23.68
	<b>Average DSCR</b>	<b>15.22</b>							
<b>L</b>	<b>Cash accruals (PBDIT- Interest-Tax) (Rs. in Lakh)</b>	<b>-4.88</b>	<b>38.14</b>	<b>45.14</b>	<b>52.11</b>	<b>52.28</b>	<b>52.45</b>	<b>52.63</b>	<b>52.8</b>
<b>M</b>	<b>Payback Period</b> (on Rs. 30 Lakhs initial investment)	<b>2 Years</b>							

### 3.19.Repayment Schedule

Year	Outstanding loan at start of yr.	Disbursement	Total outstanding Loan	Surplus for repayment	Interest payment	Repayment of principal	Total outgo	o/s Loan at the end of the yr.	Balance left
1	0	14	14	-3.20	1.68	0	1.68	14	-4.88
2	14		14	39.82	1.68	2	3.68	12	36.14
3	12		12	46.58	1.44	2	3.44	10	43.14
4	10		10	53.31	1.20	2	3.20	8	50.11
5	8		8	53.24	0.96	2	2.96	6	50.28
6	6		6	53.17	0.72	2	2.72	4	50.45
7	4		4	53.11	0.48	2	2.48	2	50.63
8	2		2	53.04	0.24	2	2.24	0	50.80



### 13.20.Assets' Depreciation

Particulars	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year	6 <sup>th</sup> Year	7 <sup>th</sup> Year	8 <sup>th</sup> Year
Civil works	2.00	1.90	1.81	1.72	1.63	1.55	1.48	1.41
Depreciation	0.10	0.09	0.09	0.09	0.08	0.07	0.07	0.07
Depreciated value	1.90	1.81	1.72	1.63	1.55	1.48	1.41	1.34
Plant & Machinery	18	16.20	14.58	13.12	11.81	10.63	9.57	8.61
Depreciation	1.80	1.62	1.46	1.31	1.18	1.06	0.96	0.86
Depreciated value	16.20	14.58	13.12	11.81	10.63	9.57	8.61	7.75
Other Fixed Assets	1.00	0.85	0.72	0.61	0.52	0.44	0.37	0.32
Depreciation	0.15	0.13	0.11	0.09	0.08	0.07	0.05	0.05
Depreciated value	0.85	0.72	0.61	0.52	0.44	0.37	0.32	0.27
All Assets	21	18.95	17.11	15.45	13.96	12.62	11.42	10.34
Depreciation	2.05	1.84	1.66	1.49	1.34	1.2	1.08	0.98
Depreciated value	18.95	17.11	15.45	13.96	12.62	11.42	10.34	9.36

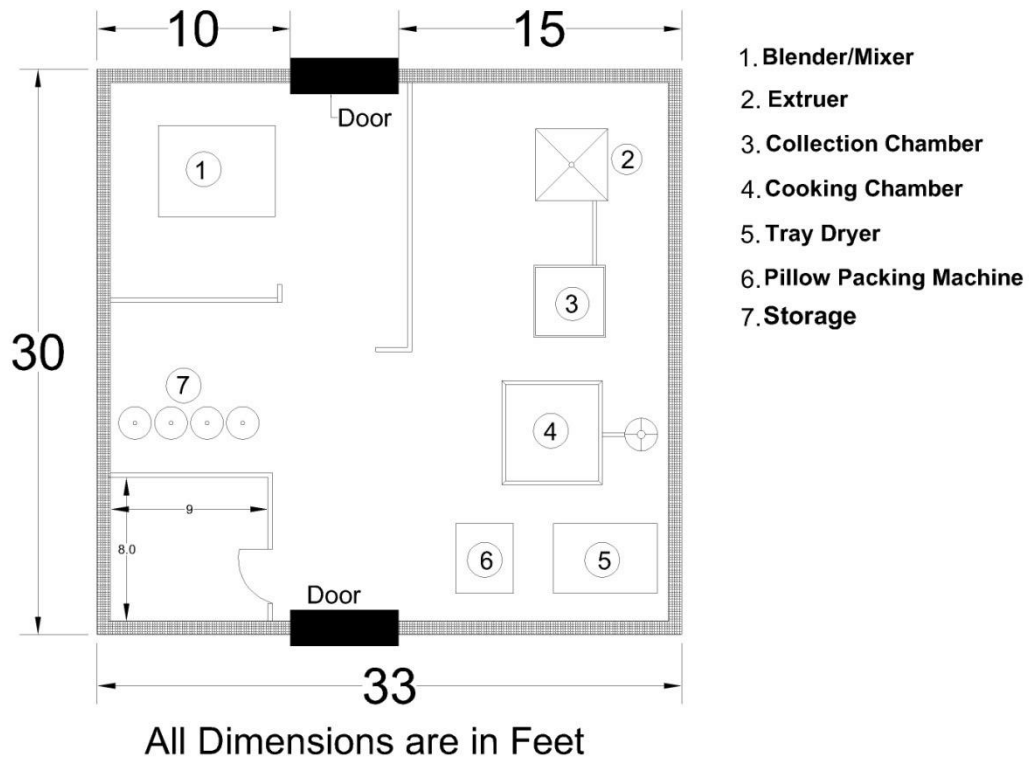
### 3.21. Financial Assessment of the Project

Sl.	Particulars	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr	
i.	Capital cost (Rs. in Lakh)	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ii.	Recurring cost (Rs. in Lakh)	3.2	80.65	90.68	100.72	100.72	100.72	100.72	100.72	
iii.	Total cost (Rs. in Lakh)	33.20	80.65	90.68	100.72	100.72	100.72	100.72	100.72	708.13
iv.	Benefit (Rs. in Lakh)	0.00	129.67	148.20	166.72	166.72	166.72	166.72	166.72	
v.	Total Depreciated value of all assets (Rs. in Lakh)									9.36
vi.	Total benefits (Rs. in Lakh)	0.00	129.67	148.20	166.72	166.72	166.72	166.72	176.08	1120.83
	Benefit-Cost Ratio (BCR): 1.58 (Highly Profitable project)									
	Net Present Worth (NPW): 412.70									

Break Even analysis indicates costs-volume-profit relations in the short run. This is the level at which, the firm is in no loss no profit situation.

Sl.	Particulars	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year	6 <sup>th</sup> Year	7 <sup>th</sup> Year	8 <sup>th</sup> Year
	Capacity utilization	Under const. (0%)	105 MT (70 %)	120 MT (80 %)	135 MT (90 %)	135 MT (90 %)	135 MT (90 %)	135 MT (90 %)	135 MT (90 %)
<b>A</b>	<b>Fixed Cost(Rs. in Lakh)</b>								
	Permanent staff salaries	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
	Depreciation on civil works @ 5% per annum	0.10	0.09	0.09	0.09	0.08	0.07	0.07	0.07
	Depreciation on machinery @ 10% per annum	1.80	1.62	1.46	1.31	1.18	1.06	0.96	0.86
	Depreciation on other fixed assets @ 15% per annum	0.15	0.13	0.11	0.09	0.08	0.07	0.05	0.05
	Interest on term loan	1.68	1.68	1.44	1.20	0.96	0.72	0.48	0.24
	Insurance	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	<b>Total Fixed Cost (Rs. in Lakh)</b>	8.83	8.62	8.2	7.79	7.4	7.02	6.66	6.32
<b>B</b>	<b>Sales Revenue(Rs. in Lakh)</b>	0.00	129.67	148.20	166.72	166.72	166.72	166.72	166.72
<b>C</b>	<b>Variable Cost(Rs. in Lakh)</b>								
	Durum wheat samolina (Av. Price @ Rs. 30/Kg )	0.00	63.00	72.00	81.00	81.00	81.00	81.00	81.00
	Packaging materials @ Rs. 3/Package	0.00	3.15	3.60	4.05	4.05	4.05	4.05	4.05
	Utilities (Electricity, Fuel)	0.00	3.60	4.11	4.63	4.63	4.63	4.63	4.63
	Casual staff salaries	0.00	3.30	3.30	3.30	3.30	3.30	3.30	3.30
	Repair & maintenance	0.00	0.50	0.57	0.64	0.64	0.64	0.64	0.64
	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	1.23	1.40	1.58	1.58	1.58	1.58	1.58
	<b>Total Variable Cost (Rs. in Lakh)</b>	0.50	76.78	86.98	97.20	97.20	97.20	97.20	97.20
<b>D</b>	<b>Break Even Point (BEP) as % of sale</b>	-	16.30	13.39	11.20	10.64	10.10	09.58	09.10
	<b>Break Even Point (BEP) in terms of sales value (Rs. in Lakhs)</b>	-	20.75	19.27	18.34	16.67	16.67	15.00	15.00

### 3.22. Plant Layout



### 3.23. Machinery Suppliers

The entrepreneur must provide tentative supplier list and quotations with respect to his project. However, there are many machinery suppliers available within India for pasta processing machineries and equipments. Some of the suppliers are:

- i. K P Automations, Sector 10, Noida, Dist. Gautam Budh Nagar
- ii. Rising Industries, Sukantapally, Kolkata
- ii. Grace Food Processing & Packaging Machinery, New Friends Colony, New Delhi

- iv. Growmax Machinery, Noida, Dist. Gautam Budh Nagar
- v. Nikky Traders, Sector 7, Noida, Dist. Gautam Budh Nagar
- vi. K K Industries, Sahibabad, Ghaziabad
- vii. S.K.Engineers, Bareilly
- viii. Khan Engineering And Food Processing Machine, Noida, Dist. Gautam Budh Nagar
- ix. Gbr Mechelectronic, Uttam Nagar, Delhi
- x. Odtin Food Solutions Private Limited, Panth Pipplai, Ujjain
- xi. R. K. Engineering Co., Makarpura, Vadodara
- xii. S. K. Engineers, Gardan City, Bareilly
- xiii. Foodax Engineering Works, Meerut Road, Ghaziabad
- xiv. Varanasi Udyog, Bhelupur, Varanasi
- xv. A. S. Engineering Works, Sector 63, Noida, Dist. Gautam Budh Nagar
- xvi. Sandha Enterprise, Ichapur, Howrah
- xvii. M/s Star Food Processing And Packaging Machines, Noida, Dist. Gautam Budh Nagar
- xviii. Sara Udyog, Sector 10, Noida, Dist. Gautam Budh Nagar
- xix. Royal Food Processing & Packaging Machines, Sector 10, Noida, Dist. Gautam Budh Nagar
- xx. Reliance Enterprise, Thakur Pukur, Kolkata
- xxi. Pre Tech Engineering, Govind Pura Industrial Area, Bhopal
- xxii. Deokali Engineering Works, Ashok Nagar, New Delhi
- xxiii. Techno Feeder Private Limited, Velachery, Chennai
- xxiv. Thomson & Thomsons Kitchen Equipment Private Limited, Asalpha, Mumbai

## **4. Limitations of the Model DPR and Guidelines for Entrepreneurs**

### **4.1. Limitations of the Model DPR**

i. This model 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 is a model DPR 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.

iv. This particular DPR is made on three components of means of finance i.e. grant, owner's contribution and loan/debt as followed in many central sector schemes.

### **4.2. 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

base/contract sourcing, entrepreneurs own SWOT analysis, detailed market research, comprehensive 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 in the targeted area 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.