Project Profiles

FOOD

Processing Industry

Grain Processing

Department of Food Processing Industries
& Horticulture
Govt. of West Bengal

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মহঃ গোলাম রব্বানী
ভারপ্রাপ্ত মন্ত্রী
খাদ্য প্রক্রিয়াকরণ শিল্প ও উদ্যানপালন দপ্তর, পশ্চিমবঙ্গ সরকার

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Foreword

West Bengal has the natural advantage of fertile soil, adequate water, and varied climatic conditions to produce a wide variety of food commodities. Farmer communities, private companies and processors of food products can be benefitted immensely from a vibrant food processing sector in West Bengal.

Entrepreneurs interested in investing in the food processing sector need good bankable projects to start their ventures, but the preparation of DPRs for such projects are both time- consuming and expensive. Besides, there is unavailability of good consultants for the same. The Directorate of Food Processing Industries recognizing this as a gap that needs to be filled up, has come up with this set of 21 DPRs of potential projects.

The aim of this set of project profiles is to further develop the food processing sector in West Bengal that meets its aspirations to become a leading state in food processing sector. Our goal remains to minimize post-harvest losses, stimulating employment and building a thriving entrepreneurship ecosystem which would benefit the state's economy and improve the quality of life. It is intended through these project profile documents to create a transparent, time-bound, responsive and positively inclined ecosystem to encourage food processing ventures in the state.

It is expected that these project profiles will help prospective entrepreneurs in the matter of ready DPRS, which may be edited easily to accommodate projects of varying scales. This would also result in savings of time and resources for the entrepreneur.

My department is committed to being by the side of entrepreneurs. This set of publications has been developed after considerable inputs from across the state to take ahead the food processing sector in the state.

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Model Project Report on

Cornflakes Processing

Cornflakes Processing –Model Project Report

Introduction

Maize is the third most important cereal in India. West Bengal is ranked 7th in the production of Maize as per the production data available for the year 2019-20. West Bengal produced 20.08 lakh tones of maize during the year 2019-20. State-wise production data for the year 2019-20 is given in Annexure 1. This increase in production has happened over the last few years with the focus given by the state government for increasing maize production in state. Maize is not only used for human consumption but also is an important component of poultry and cattle feed. As the production increases, there is a need to have processing industry linked to it so as to provide forward linkage to the farmers. This would in turn enable them to get a good price for the produce. Maize can be processed into various items of which one of the important one is Cornflakes. With the life style and cultural changes, more and more people are adopting this as an important food item specially for breakfast. Given this scenario it is felt that production of cornflakes from maize will be a profitable venture.

Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The Proforma for promoter detail is given in Annexure – 2.

History of the company

The project has been prepared as if a new set up is being made for the purpose of cornflakes processing. The same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained/presented in the project report. Proforma for company report is given in Annexure-3.

Finished product and its utility

Corn when converted to cornflakes makes a good and easy product for breakfast specially in urban and areas. Converting maize to flakes using steam treatment, as is done in the processing system, makes it easy to digest and considered a healthy source of starch and energy. It is a fast way of having breakfast. With more families becoming unitary and both husband and wife doing jobs, it becomes an easy breakfast taking practically no time to prepare. It is because of this reason its popularity is only going to increase.

Market, Demand and Major Competitors

The are a number of major manufacturers of cornflakes like Nestle INDIA Ltd, C. G D Foods Mfg India Pvt Ltd, Kwality Ltd , Mohan Meakin Ltd, Frontier Biscuit Factory Pvt Ltd., Laxmi Flour Mill, Kelloggs India Pvt Ltd.,

Bagrrys India Limited to name a few. In addition there are smaller producers across the country. However, the demand for cornflakes is rising and with a burgeoning middle class population, the demand for cornflakes is surely going to rise further. Given the scenario investing in value addition of converting corn to cornflakes appears to be an attractive proposition. There are two alternatives for this. The company can go ahead and tie up with any of the big names and become their supplier or make an effort to set up its own brand. The second alternative though a tougher one, is more profitable. However, if one attempts to focus on the local market, it is not an impossible proposition.

Note: In addition details of localized competition, if any has to be mentioned while preparing the final DPR based on where the unit is going to be set up.

Raw Material Requirement

The only raw material required if one wants to produce plain cornflakes is maize. Adding flavours would mean ingredients for the same also would be required. However, the major component of input remains to be maize. It is a seasonal crop and needs to be purchased at a time when the price is low so as to maximize profits. This would necessitate having storage arrangements as well because it would be best to procure the same when the prices are at its lowest. This would also necessitate high requirement of working capital as procurement of raw material will have to be done once in a year. The cost benefit of the same has to be judged by the investor carefully based on where the unit is set up. West Bengal government has decided to raise cultivation of maize in the state by 33% from the current 15 lakh metric tonnes per year to 20 lakh metric tonnes in two years time. The further stress on improving maize production comes after the state government won the Krishi Karman Award this year for improvement in maize production in the country. This award has proved the big potential that the state has to become one of the biggest producers of the crop in the country. Given this scenario raw material supply should not be a problem. In addition it may be stated that corn has 32% water and dried corn has 22% water.

Manufacturing Process

The process of manufacture for cornflakes is well-established. The general process which is followed is explained here.

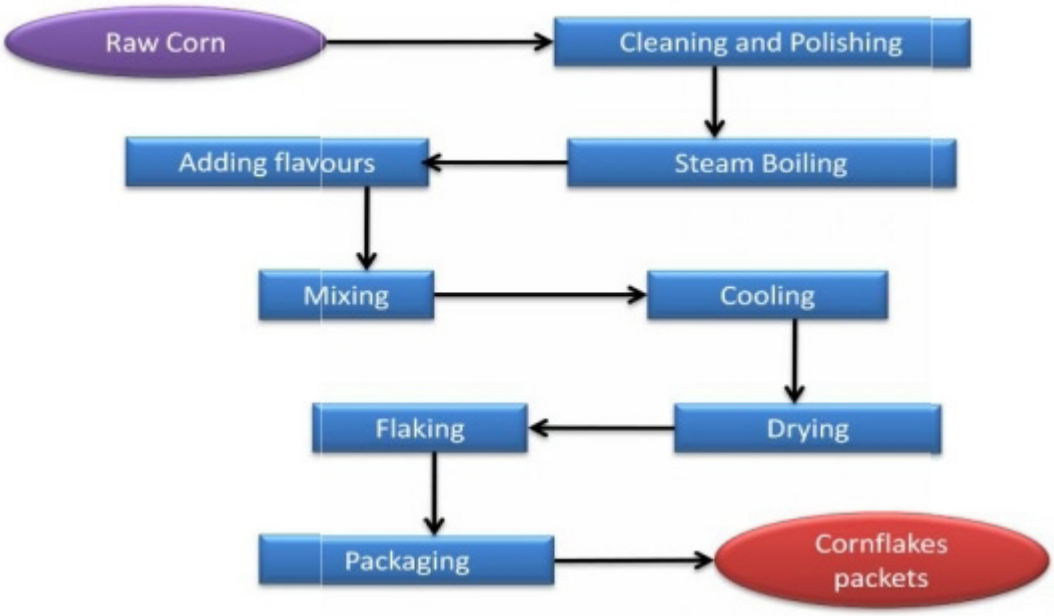
- Maize grains are cleaned and polished. The dirt which comes along with harvested maize and the bran is removed at this stage.
- It is then boiled using steam in a boiler. The boiling helps in softening of the grains. It makes it fit for rolling as well. The process takes about two hours.
- Flavour is also added after boiling and is put through the process of mixing to making it evenly flavoured.
- The grains are then cooled.
- The humidity in the grains is then reduced by putting the same through a drying oven.

- After removing excess humidity, the same is put through a tempering tank which enables even distribution of humidity. It is necessary to do this so that when the grains are passed through the flaking machine even distribution of humidity ensures evenness in the thickness of the flakes.
- The grains are then passed through the flaking machine which basically passes the grains through two rollers.
- It then is passed through a rotary oven to dry the flakes and then through a conveyor belt, the same is collected and packed immediately either in bulk or in packet sizes decided for marketing. The packets then need to be put in cardboard boxes before transportation to prevent the flakes from being crushed.

SWOT Analysis

Strengths	**Weakness**
➢ Increasing Demand due to life style changes. Its an easy healthy breakfast for working couples ➢ It's a daily need product is urban households. ➢ It is also used by the snack food industry and is part of farsan items	➢ While maize production in the state is on the rise, one has to ensure carefully, the supply of raw material. One may have to store store raw material for a long period as maize is a seasonal crop.
Opportunities	**Threats**
➢ People keen in looking for variety ➢ Scope for diversification within the domain bringing out different kinds of cornflakes with different flavours.	➢ International competitors like Kelloggs have captured the market ➢ Highly automated plants can become a threat in the long run.

Flow Chart for Cornflakes Processing



Financial Aspects of the Project

Infrastructure requirement

Any project preparation is based on a set of assumptions made which are close to the market reality. In this project, the land used is assumed to be own land. The major component of a cornflakes processing unit is land, building, plant and machinery and civil works. List of all the assumptions made is given in Annexure 4. As the raw material will be purchased in bulk, 300 working days have been taken which can be achieved by proper planning.

Land and its development

A plot of approximately 4500 sq.ft would be necessary for setting up a cornflakes processing factory of this scale. In addition there will be need for storage space for raw material, effluent treatment, etc. The overall land requirement would be around 1 acre also keeping in view possibility of future expansion. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as non-agriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land.

Size of the unit

The capacity has been restricted to 720 tonnes of maize grain per annum. It would be better to restrict the size of operation at this level because of various reasons. Anything less than the said capacity could lead to viability issues as per market information. Anything larger than this may lead to two problems. Firstly raw material sourcing has to be set up. Having a huge capacity would mean keeping the same idle for a longer period of time. While maize is available in abundance, ensuring tie ups take time, specially, if the same has to be procured from other states. Such a problem may not come up given the thrust given by state government for maize cultivation. However, one needs to be prepared for any eventuality. The capacity can be upgraded by ensuring additional land space if the borrower wants it that way which has been suggested in the project by assuming land requirement to be one acre. Second reason is marketing of end product. It has been assumed that the entrepreneur would be targeting to set up his own brand. The first task along with producing cornflakes would be used for developing marketing linkage and establishing the brand. Based on the level of success and demand created in the initial 2-3 years, just by tweaking the existing set up, different products could be tried and if the same succeeds, one would go in for expansion may be after 3-4 years and maintain a healthy product mix. If however, the entrepreneur is certain about the tie up for raw material and market, then, one can go in for a higher capacity.

Machineries and Equipment

Various machineries and equipments will be required for setting up the plant The list of such equipment and number of such units required for setting up a cornflakes processing plant along with Miscellaneous fixed assets for which investment has to be made is given below. This would have a maximum capacity of 300 kg or 2.4 tonnes per day @ rate of 8 hours per day. For 300 days in a year this would mean 720 tonnes per annum.

Earlier various equipment used to be supplied by different suppliers. However, today we can have the same being supplied on a turnkey basis by a single supplier and this is a better alternative for reasons enumerated below.

Processing Equipment cost				
Sl no.	**Machine**	**Unit**	**Unit Cost**	**Amount in Rs.**
1	Mixer 5 HP	1	13000000/ Equipments are generally supplied by the same supplier on a turnkey basis. It is advisable to take it that way for better support for repairs and maintenance	13000000
2	Screw Conveyor 1 HP	1		
3	Extruder 35 HP	1		
4	Cooling machine 2 HP	1		
5	Air Conveyor 1 HP	1		
6	Presser 15 HP	1		
7	Air Conveyor 1 HP	1		
8	Multilayer dryer 35 HP	1		
9	Hoister 1 HP	1		
10	Vibrating Feeder 1 HP	1		
11	High temperature Oven 3 HP	1		
12	Hoister and Seasoning Machine 2 HP	1		
13	Liquid Sprayer 2 HP	1		
14	Single roller with heating system 7 HP	1		
15	Vibrating Feeder 1 HP	1		
16	Multilayer dryer with slope 56 HP	1		
17	Cooling Machine 2 HP	1		
18	140 KVA DG Set	1	1000000	1000000
19	Effluent Treatment Plant	1	1500000	1500000
20	Packaging equipment	1	570000	570000
	Total ex factory cost			16070000
	GST, Transportation, installation, training, etc cost in percentage	30%		4821000
	Total cost			20891000

Some of the issues which need to be pointed out regarding the cost of equipment are as follows:

1. Prices quoted on Indiamart or companies are generally excluding GST, Transportation charges and installation charges as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
2. Based on the searches on Indiamart, it is observed that there are companies like Grace Food Processing and Packaging Machinery who implement such projects on a turnkey basis. There could be other companies as well giving a single window solution. It is suggested that it would be better for an entrepreneur to buy all equipments from a single vendor because the following reasons.

a. There will not be any mismatch between equipments and automation would be smoother.

b. Single point of contact would not allow any blame game between vendors in case something goes wrong.

c. Power assessment would be better and line can be drawn accordingly

d. A single unit set up by any of these can be visited to get a clear overview.

e. Training would be much easier as it would from one agency

3. The packaging machine would depend on what volume we want to pack. As we are targeting direct marketing, the packaging size would vary between 500 grams to 1 kg or at the most 2 kg. The machine taken here has a capacity of weighing between 10 grams to 2 kgs. In case the entrepreneur finds that there is a market requirement of say 250 grams or 2 kgs, the machine can be set up to give such pouch packets.

Miscellaneous fixed assets				
Sl. No.	**Particulars**	**Units**	**Unit cost in Rs.**	**Amount in Rs.**
1	Electrical and water Connection	1	200000	200000
2	Chairs	11	2000	22000
3	Table	2	5000	10000
4	Computer	2	50000	100000
5	Printer	1	15000	15000
	Total			**347000**

Given the total size of the project, as well as the fact that maize is a seasonal crop there will be a need for silo storage for corn with a capacity of 700 tonnes to stock raw material for 300 days and a godown to store processed goods. The cost of the same is given below:

Construction of godown and silo				
Sl. No.	**Particulars**	**Units**	**Unit cost in Rs.**	**Amount in Rs.**
1	Prefabricated godown for finished goods	1	1000000	1000000
2	Silo for 700 tonnes @100 tonnes per silo	2	400000	800000
	GST, Installation and transportation		30%	540000
	Total			**2340000**

It is assumed that the land used for the project which would be about 1acre will be own land keeping an eye on future expansion needs as it would need more silos to be set up. The building for setting up the processing unit would cost as per estimates given below:

Land and Building			
Particulars	**Area reqd**	**Rate/sqft in Rs.**	**Amount in Rs.**
Land cost		Own land - 1 acre	0
Building cost @ 1430/-- per sq ft	4500	1430	6435000
Total cost			6435000

There will be need for transportation of goods both raw material and finished goods. It has been assumed that around six vehicles would be required for this purpose. The cost of the same is given below:

Vehicles for transportation of goods	Units	Price in Rs.	Amt in Rs.
8-10 tonne capacity truck	2	2500000	5000000
4-5 tonne capacity truck	2	1500000	3000000
Small Transport Vehicle (1 tonne)	2	800000	1600000
Total			**9600000**

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

Project Summary			
Project Cost excluding land in Rs.			39613000
Preoperative Expenses in Rs.			396130
Total Project Cost excluding land in Rs.			**40009130**
Own Contribution in Rs.			**16003652**
Estimated Bank loan in Rs.			**24005478**
Own Contribution in Lakh			**160.04**
Bank Loan in Lakh			**240.05**

Project Timeline

The project to start off production would need around one year for implementation to be completed.

The breakup for the same is given in table below:

Activities	Projected time period
Arrangement of finance	3 months
Building of premises/Acquisition of premises	6 months
Procurement of equipments	2 months
Recruitment of manpower	1 month
Training	1 month

As recruitment of manpower can be done along with procurement of equipment and the activity would not be part of the critical path, the total time taken would be 12 months for setting up the project and to reach a position to start production. Hence, one year moratorium has been taken. If “ready to move in” premises suitable for the

project is acquired, then the timeline would come down by around 3 months. However, in this project it has been assumed that the unit will be set up in own land and costing has been done assuming the same.

Price of finished goods:

The price of finished goods is taken at a very conservative rate of Rs.80/- for a 500 gram pack. The price of corn flakes varies widely based on flavor and the brand. Some of the sample retail prices which could be obtained are given in the table below:

Brand	Variety	Pack size in gms	Price in Rs.
Kelloggs	Corn flakes with real almonds and honey	650 gms	342
Kelloggs	Corn flakes	875 gms	270
Kelloggs	Corn flakes	475 gms	155
Big Basket	Corn flakes with real almonds and honey	650 gms	248
Big Basket	Corn flakes classic	475 gms	109
Druk	Corn flakes	500 gms	109
Zerobeli	Corn flakes	330 gms	150
Natureland	Natureland Organics Corn Flakes	250 gms	99
Zerobeli	Corn flakes - Strawberry	300 gms	150

As may be seen, pricing of the product varies widely. Always having a low price may not be the best idea. Having a price drastically low from what the market is charging may make people feel that the product is cheap. An alternative could be to price it high but give an introductory discount for about say six months to make the product popular. For example the lowest price for classic corn flakes in the above sample data is that of Druk charging 109/- for 500 grams. We may decide to price it at 115 and give a 20% discount as an introductory offer and hence customer will essentially pay 92/- for 500 grams. However, it has to be ensured that the product quality is good ensuring that the customer remembers the product. Then the price can be raised to the normal level. For the model project, the price taken for every 500 gram pack is Rs.80/- only. That's because of the fact that the option for bulk sale has to be kept open. Salted Corn flakes is also used for other snacks and the alternative should be kept open. The price realization here may be low and the sale has to be in bulk to companies using it as one of the ingredients for making things like Chura. However, as direct marketing takes time to stabilize, it is better to keep this alternative of B2B open from the beginning. This would help in ensuring that the bottom line is safe. It is because of this the average price taken is Rs.80/-.

Working Capital requirement

Working capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated above from which working capital requirement is generated. In the following tables details of working capital requirement is assessed.

Raw Material requirement and cornflakes production	
Production computation	
Item	
Machine capacity per day (in tonne)	2.4
Working days per annum	300
Processed cornflakes as percentage of Raw material	60%
Raw material requirement in tonne	**720**
Final output (after accounting for wastage) in tonne	**432**
Packaging size in Kg	0.5
No. of packages	864000

cornflakes Production for 5 years					
Production Period	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation	0%	50%	55%	60%	65%
Raw material requirement per day	0	1.2	1.32	1.44	1.56
Raw material required in tonnes	0	360	396	432	468
Rate per tonne in Rs.	0	22000	23100	24255	25468
Cost of packaging material per 0.5kg	0	3	3.15	3.31	3.48
Estimated Cost of packaging	0	12.96	14.97	17.16	19.54
Total Cost in Rs. Lakh	0	92.16	106.45	121.94	138.73
Calculation of Sales					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Production of cornflakes					
Opening Stock	0	0	21.6	23.76	25.92
Production in tonnes	0	216	237.6	259.2	280.8
Closing Sock	0	21.6	23.76	25.92	28.08
Net Sales	0	194.4	235.44	257.04	278.64
Sales price per packet of 0.5 grams incl packaging	0	80	83	86	89
Sales value in Rs. Lakh	**0**	**311.04**	**390.83**	**442.11**	**495.98**
Calculation of Sales					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Production of cornflakes					
Opening Stock	0	0	21.6	23.76	25.92
Production in tonnes	0	216	237.6	259.2	280.8
Closing Stock	0	21.6	23.76	25.92	28.08
Net Sales	0	194.4	235.44	257.04	278.64
Sales price per packet of 0.5 grams incl packaging	0	80	83	86	89

Working capital requirement has to be evaluated based on the above mentioned details. The same is given in the table below:

Working Capital Assessment					
Computation of value of closing stock and working capital requirement					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Finished goods inventory in kg	0	21600	23760	25920	28080
Price of finished good/0.5 kg in Rs. including packaging material	0	80	83	86	89
Total finished goods stock price in Rs. Lakh	0	3456000	3944160	4458240	4998240
Raw material inventory in tonne	0	108	118.8	129.6	140.4
Price of Raw Material/tonne in Rs.	0	22000	23100	24255	25468
Packaging Material per 0.5 kg	0	3	3.15	3.31	3.48
Total Raw Material Stock Price	0	2764800	2766733	3169187	3605023
Total value of stock in Rs.	0	6220800	6710893	7627427	8603263
Amount in Lakh	0	62.21	67.11	76.27	86.03
Less Creditors in lakh	0	15.55	16.78	19.07	21.51
Paid Stock in lakh	0	46.66	50.33	57.2	64.52
Add sundry debtors in lakh	0	9.33	10.07	11.44	12.9
Total	**0**	**55.99**	**60.4**	**68.64**	**77.42**
Own contribution @ 25%	**0**	**14**	**15.1**	**17.16**	**19.36**
Working Capital requirement	**0**	**41.99**	**45.3**	**51.48**	**58.06**

The project is expected to generate sufficient cash and working capital limit is pegged at the equirement of the second year, first year being the moratorium for setting up the factory.

Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, and electricity charges. The details of these expenses are given below:

Labour and Staff Salary/wages				
Particulars	**Wages/ Salary per month**	**No. of employees**	**Total Salary per month in Rs.**	**Annual Salary in Rs.**
Manager	30000	1	30000	360000
Accountant	25000	1	25000	300000
Helper	10000	1	10000	120000
Plant Operator	20000	1	20000	240000
Skilled labour	15000	4	60000	720000
Unskilled labour	10000	3	30000	360000
Total Salary in Rs.			**175000**	**2100000**

Projected Salary Expenses				
Salary expenses Projection	1st year	2nd year	3rd year	4th year
Annual Salary expenses in Rs.	0	2100000	2310000	2541000
Salary expenses rounded off to lakhs	0	**21**	**23.1**	**25.41**
Electricity Charges				
Particulars	1st year	2nd year	3rd year	4th year
Capacity Utilisation	**0%**	**50%**	**55%**	**60%**
Consumption of power per day in units	0	300	330	360
Rate per unit in Rs.	9.00	9.00	9.00	9.00
Power bill per month in Rs.	0	67500	74250	81000
Total power bill per year	**0**	**810000**	**891000**	**972000**
Power bill in Rs. Lakh	**0**	**8.1**	**8.91**	**9.72**
Packaging Cost				
Particulars	1st year	2nd year	3rd year	4th year
Cost of Packaging per unit (0.5 kg)	0	3	3.15	3.31
Total Production in kg	0	216000	237600	259200
Packaging cost in Rs. Lakh	**0.00**	**12.96**	**14.97**	**17.16**
Selling, transportation and administrative expenses				
Particulars	1st year	2nd year	3rd year	4th year
Sales and branding expenses per annum	0	1000000	1000000	1000000
Admin Expenses	0	480000	480000	480000
Transportation charges	0	480000	480000	480000
Total Expenditure on Sales, Admin &Transportation	**0**	**1960000**	**1960000**	**1960000**
Sales & Admin Expenses in Rs. Lakh	**0**	**19.60**	**19.60**	**19.60**

All these costs will be factored in later in the report while evaluating the financial benefits of the project

Depreciation

The depreciation calculation is as follows:

Depreciation Calculation					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Total value of equipments in Rs.	0	30838000	26212300	22280455	18938387
Depreciation @15% in Rs.	**0**	**4625700**	**3931845**	**3342068**	**2840758**
Value at the end of the year to be carried forward in Rs.	0	26212300	22280455	18938387	16097629
Total Value of building, silo and godown in Rs.	0	8775000	7897500	7107750	6396975
Depreciation of building@10% in Rs.	**0**	**877500**	**789750**	**710775**	**639698**
Value at the end of the year to be carried forward in Rs.	0	7897500	7107750	6396975	5757277
Total depreciation	**0**	**5503200**	**4721595**	**4052843**	**3480456**
Total depn in Lakh	0	55.03	47.22	40.53	34.8

Repairs and maintenance

In case of new equipments including computers, generally they give a warranty for one year. Thus the maintenance cost would be starting from the second year onwards. The same in general is given at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

Cost of Maintenance	
Particulars	**Amount**
Total fixed cost	30838000
Maintenance cost in percentage	20%
Cost of Maintenance	6167600
Maintenance cost in Rs. Lakh	61.68

Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

Cost of The Project	
	(in Rs. Lakh)
Particulars	**Amount**
Land & Building*	64.35
Godown and silo	23.4
Plant & Machinery	208.91
Misc. Items, transport & preop expenses	103.43
Working Capital	55.99
Total	456.08
*Land is assumed as own land and hence cost taken is 0	
Means of Finance	
	(in Rs. Lakh)
Particulars	Amount
Own Contribution	160.04
Term Loan from Bank	240.05
Working Capital Own contribution	14.00
Working Capital	41.99
total	456.08

The detailed repayment schedule of the term loan is indicated in Annexure 5. The interest for the first year is capitalized and loan outstanding accordingly increased in the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may

not be necessary as the project should be able to generate suffcient profits and the internal accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

Year-wise Interest on Bank Loan					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Interest on Term Loan in Rs.*	2640552	2595166	1862413	1129659	396906
Interest on Term Loan in Rs. Lakh	26.41	25.95	18.62	11.30	3.97
Interest on working Capital	0	4.62	4.62	4.62	4.62
Principal Repayment in Rs.	0	6661392	6661392	6661392	6661376
Principal Repayment in Rs. Lakh	0.00	66.61	66.61	66.61	66.61
Balance outstanding - end of the year	266.46	199.85	133.24	66.63	0.00
* Interest on term loan has been capitalised at the end of the year leading to increase in the capital outlay. This has been done to account for the one year moratorium.					

Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented above in the series of tables. Accordingly the projected profit and loss account, balance sheet, and cash statement along with breakeven analysis is presented in the tables below. During the moratorium period the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over a period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

Projected P&L Statement					
					(in Rs. Lakh)
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation%	0%	50%	55%	60%	65%
Gross Sale of cornflakes	0	311.04	390.83	442.11	495.98
Total	**0**	**311.04**	**390.83**	**442.11**	**495.98**
Cost of Production					
Raw Material Consumed	0	79.2	91.48	104.78	119.19
Electricity Charges	0	8.1	8.91	9.72	10.53
Depreciation	0	55.03	47.22	40.53	34.8
Salary and wages	0	21	23.1	25.41	27.95
Repair and Maintenance	0	61.68	61.68	61.68	61.68
Packaging	0	12.96	7.48	8.58	9.77
Selling & Admn Expenses		19.60	19.60	19.60	19.60
Total Cost of Production	**0**	**257.57**	**259.47**	**270.3**	**283.52**
Profit before interest and taxes	**0**	**53.47**	**131.36**	**171.81**	**212.46**

Interest on Term Loan*	0.00	25.95	18.62	11.30	3.97
Interest on Working Capital	0	4.62	4.62	4.62	4.62
Total Interest Payment	**0.00**	**30.57**	**23.24**	**15.92**	**8.59**
Profit before Tax	0.00	22.90	108.12	155.89	203.87
Income Tax	0	5.73	27.03	38.97	50.97
Net profit after tax	**0.00**	**17.17**	**81.09**	**116.92**	**152.90**
Term loan interest for first year capitalised to account for the moratorium					

As can be seen, the unit would be in profits after tax from second year onwards. The amount of money generated, if the business is run and managed systematically is sufficient to finance the increased requirement of working capital.

Projected Balance Sheet					
					Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Liabilities					
Capital					
Opening Balance	0	160.04	191.21	272.3	389.22
Own Capital Contribution	160.04	14.00			
Retained Earnings	0.00	17.17	81.09	116.92	152.90
Total-Closing Balance	**160.04**	**191.21**	**272.3**	**389.22**	**542.12**
Term Loan	266.46	199.85	133.24	66.63	0.00
Working Capital Limit		41.99	41.99	41.99	41.99
Sundry Creditors	0	15.55	16.78	19.07	21.51
Total Liabilities	**426.5**	**448.6**	**464.31**	**516.91**	**605.62**
Assets					
Fixed Assets	400.09	400.09	400.09	400.09	400.09
Gross Depreciation	0	55.03	102.25	142.78	177.58
Net Fixed Assets	**400.09**	**345.06**	**297.84**	**257.31**	**222.51**
Sundry Debtors	0	9.33	10.07	11.44	12.9
Stock in Hand	0	62.21	67.11	76.27	86.03
Interest capitalised	26.41	0	0	0	0
Cash and Bank Balance	0	32	89.29	171.89	284.18
Total Assets	**426.5**	**448.6**	**464.31**	**516.91**	**605.62**

The project is generating healthy profit from second year with the first year being moratorium as presented above. The breakeven analysis indicates the level of operation at which the operations will breakeven and not have any loss. It becomes important to identify the fixed and the variable costs. Even within variable

component there is always a part which is fixed. For example, even if the plant is not running there will be lights and fans which will be used for administrative work, people will have to be paid salary for those days as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost÷Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 39% capacity utilisation.

Breakeven Point Analysis		
		Rs. In Lakh
Total Sale (Sales - opening WIP + closing WIP)	**Year 1**	**Year 2**
Net Sales	0.00	311.04
Less: Opening Stock	0.00	0.00
Add: Closing Stock	0.00	0.02
Total Production/Sales	**0.00**	**311.06**
Variable Expenses		
Raw Material and Packaging	0.00	92.16
Interest on working Capital	0.00	4.62
Repair and Maintenance	0.00	15.42
Salary expenses	0.00	2.10
Sales & Admin Expenses	0.00	2.94
Energy - Electricity	0.00	7.94
Total	**0.00**	**125.18**
Contribution	**0.00**	**185.88**
Contribution per unit (per tonne)	**NA**	**95617.28**
Fixed expenses		
Interest on Term Loan	0.00	25.95
Repair and Maintenance	0.00	46.26
Salary expenses	0.00	18.90
Sales & Admin Expenses	0.00	16.66
Energy - Electricity	0.00	0.16
Depreciation	0.00	55.03
Total	**0.00**	**162.96**
Capacity utilisation	0%	50%
Operating Profit	**0.00**	**22.92**
Breakeven point in physical units	**NA**	**170**
Breakeven point in capacity utilisation (%)	**NA**	**39%**

Cash Flow Statement					
					Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Sources of Fund					
Own margin	160.04	14.00			
Profit Before Interest and Tax	0.00	53.47	131.36	171.81	212.46
Depreciation	0.00	55.03	47.22	40.53	34.80
Working Capital accretion	0.00	41.99	0.00	0.00	0.00
Term Loan accretion	240.05	26.41	0.00	0.00	0.00
Creditors	0.00	15.55	1.23	2.29	2.44
Total	**400.09**	**206.45**	**179.81**	**214.63**	**249.70**
Uses of Fund					
Fixed Assets	400.09	0.00	0.00	0.00	0.00
Stock in Trade - Accretion	0.00	62.21	4.90	9.16	9.76
Debtors - Accretion	0.00	9.33	0.74	1.37	1.46
Repayment of term Loan	0.00	66.61	66.61	66.61	66.61
Interest on Term Loan	0.00	25.95	18.62	11.30	3.97
Interest on working capital	0.00	4.62	4.62	4.62	4.62
Income Tax	0.00	5.73	27.03	38.97	50.97
Accretion in cash & bank balance	0.00	32.00	57.29	82.60	112.31
Total	**400.09**	**206.45**	**179.81**	**214.63**	**249.70**

The cash flow statement above indicates that chance of any problem with the cash is very little or so to say practically nil in the project. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the same, sudden problem with supply of raw material or shipment not arriving, etc. Now these are unforeseen risk which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to have that.

Calculation of DSCR					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Cash Accruals					
Depreciation	0	55.03	47.22	40.53	34.8
Profit before interest and taxes	0	53.47	131.36	171.81	212.46
Total	**0**	**108.5**	**178.58**	**212.34**	**247.26**
Repayments					
Interest on Term Loan	26.41	25.95	18.62	11.30	3.97
Term Loan Instalments	0.00	66.61	66.61	66.61	66.61
Total	**26.41**	**92.56**	**85.23**	**77.91**	**70.58**
Debt Service Coverage Ratio	**0**	**1.17**	**2.1**	**2.73**	**3.5**

The debt service coverage ratio from second year is 1.17 and above indicating that the project should not have a problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is a healthy 1.35 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 441.27 lakh. And the internal rate of return at 15% discount rate comes to 43% which essentially indicates that at 43% discount the net present value of benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

BC Ratio, NPV and IRR								**(Amt in Rs. Lakh)**
Costs and revenue items	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**	**6th year**	**7th year**	**8th year**
Fixed Costs	400.09							
Variable costs								
Raw material	0	92.16	106.45	121.94	138.73	156.85	176.44	197.61
Salary	0	21	23.1	25.41	27.95	30.75	33.82	37.2
Electricity	0	8.1	8.91	9.72	10.53	11.34	12.15	12.96
Maintenance	0	61.68	61.68	61.68	61.68	61.68	61.68	61.68
Sales and Admin exp	0	19.60	19.60	19.60	19.60	19.60	19.60	19.60
Total Costs	**400.09**	**202.54**	**219.74**	**238.35**	**258.49**	**280.22**	**303.69**	**329.05**
Rate of discount	15%							
Present value of costs	1253.21							
Revenues								
Sale of finished goods								
cornflakes	0	311.04	390.83	442.11	495.98	558.45	624.37	693.75
Total	**0**	**311.04**	**390.83**	**442.11**	**495.98**	**558.45**	**624.37**	**693.75**
Rate of discount	15%							
Present value of benefits	1694.48							
BC Ratio	1.35							
Net Benefits	-400.09	108.5	171.09	203.76	237.49	278.23	320.68	364.7
Rate of discount	15%							
NPV	441.27							
IRR	43%							

Registration/Certification

There are four registrations necessary for MSMEs which are involved in food proceesing. A brief on the same is given below:

1. **GST:** GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central government is being linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by GoI.

   (https://reg.gst.gov.in/registration/)

2. **FSSAI:** The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards operating procedures, food safety norms, packaging & labeling norms. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India.
   The registration can be done at FSSAI website. (https://fssai.gov.in/cms/registration.php)

3. **UDYAM:** The entrepreneur may consider getting himself registered in UDYAM

   (https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm).

4. **ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging along with FSSAI registration. Various agencies are there doing this job of certification. One such site available ishttps://legalwaycertification.com/iso/. There are many other such agencies who have been authorized to issue ISO certification.

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required. For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year. In addition to the ones stated above, it would be necessary to take fire and pollution clearances. It would also be advisable choose a brand name for the product and secure the name with trademark.

Having a trademark is useful for bulk sale and is necessary for direct marketing as well as exports.

Model Project Report on

Arhar Daal Processing

Arhar Daal Processing – Model Project Report

Introduction

Daal milling is the third largest food processing industry in India. The production of pulses in India ranges between 12-15 million tonnes per year. Pulses require to go through the process of separation opf husk to make it available for the market. Generally, pulses are consumed as a part of the regular meal after conversion into de-husked split pulses as it makes cooking easy. According to some surveys, 70% of the pulses produced in India gets converted to what we call as Daal. There are various kinds of pulses produced in India and all need to go through the milling process. It would thus be preferable to have a unit in which any kind of daal can be processed. In other words a daal mill needs to be versatile to process any kind of pulses based on demand in the locality.

While Toor daal (Arhar) is the most commonly consumed daal in the country as a whole and hence has been taken up for the project. During 2019-20, the total Production of Pigeon Pea (Arhar) stood at 3891700 tonnes. West Bengal stood 15th among the states in Pegion Pea production producing 4130 tonnes compared to 2942 tonnes in 2014-15 indicating that the production of pigeon pea has been on the rise in the state.

Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The Proforma for promoter detail is given in Annexure – 1.

History of the company

The project has been prepared as if a new set up is being made for the purpose of Arhar daal processing. The same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained/presented in the project report. Proforma for company report is given in Annexure-2.

Finished product and its utility

Daal is a major source of protein among the people in India. It is a plant based protein, healthy for the kind of weather we have in India and a delicious dish consumed along with Rice or bread. Daal is also used in making sweets and other preparations. It is also used as an ingredient for salted snacks.

Market, Demand and Major Competitors

As such branded daal is something which has come to India in the last 10-15 years. As such locally produced unbranded daal continue to play a major role in the market. However, the market of branded daal is developing

fast. Pigeon pea production though on the rise is comparatively low in West Bengal. However, the consumption is high, and the state depends on imports from other states. This gives a room for processing in West Bengal. The strategy of the backward and forward linkages would thus be as follows

1. Procure raw material from wholesalers or over contacts outside the state.
2. In the meanwhile, wherever possible develop farmer level contacts locally through SHGs and FPOs to urge them to change over to cultivating Arhar wherever possible assuring them of regular purchase. If it works, this development activity undertaken will pay rich dividends in the long run.
3. For output initially sell the major part in bulk but also start along with it smaller packs initially in a limited way. Hence for evaluating the project while the price of output level has been taken at wholesale rates, packaging machine has been included for smaller pouch packing.
4. Then when the brand becomes successful in a small way, increase small packaging and reduce bulk sale.
5. One may a even consider keeping both without reducing the bulk sales by increasing operations to two shifts.

Raw Material Requirement

The raw material required would be pulses in this case. Various kinds of pulses could be procured and processed into Daal. Procurement could be done through platforms like Indiamart or from the local wholesale market. However, as stated earlier, it would be a good strategy to motivate local farmers to cultivate pigeon pea. As such we propose to have a 1 tonne per hour unit which would mean a requirement of 8 TPD for a single shift operation. All these factors have to be taken while calculating the inventory requirement. As such 90 day inventory including work in progress should be sufficient for the purpose of running the plant which on a single shift would mean 720 tonnes. Annual requirement of raw material would be around 2400 tonnes.

Manufacturing Process

There are two methods of pulse milling viz., wet method and dry method

Wet method of pulse milling:

- Pulses are cleaned to remove dust, dirt, chaff, stone pieces, immature grains and other seeds.
- The easy to dehusk pulses are then soaked into water for a period of 2 to 8 hrs whereas difficult to dehusk type of pulses (pigeon pea, black gram, green gram) are often treated with red earth.
- Pulses are subsequently dried
- After this dehusking and splitting is done to obtain the final output.

Dry method of pulse milling:

In case of dry method of pulse milling the steps are as follows:

- Pulses are cleaned at the beginning
- Cleaned pulses are fed into roller dehusker where a scratch, dent and crack is formed on the outer seed coat.
- Pitted pulses are then stored for 2 to 3 days after applying oil on the surface. Generally 150 to 250 gm oil per 100 kg pulses is applied. The oil diffuses between husk and cotyledon and thus facilitates loosening of the husk.
- Water treatment (2.5 to 3.5 kg water/100 kg pulses for overnight period) helps in further loosening of the husk.
- Pulses are then subjected to drying and cooling.
- The dried pulses are dehusked and splitted to obtain the final output.

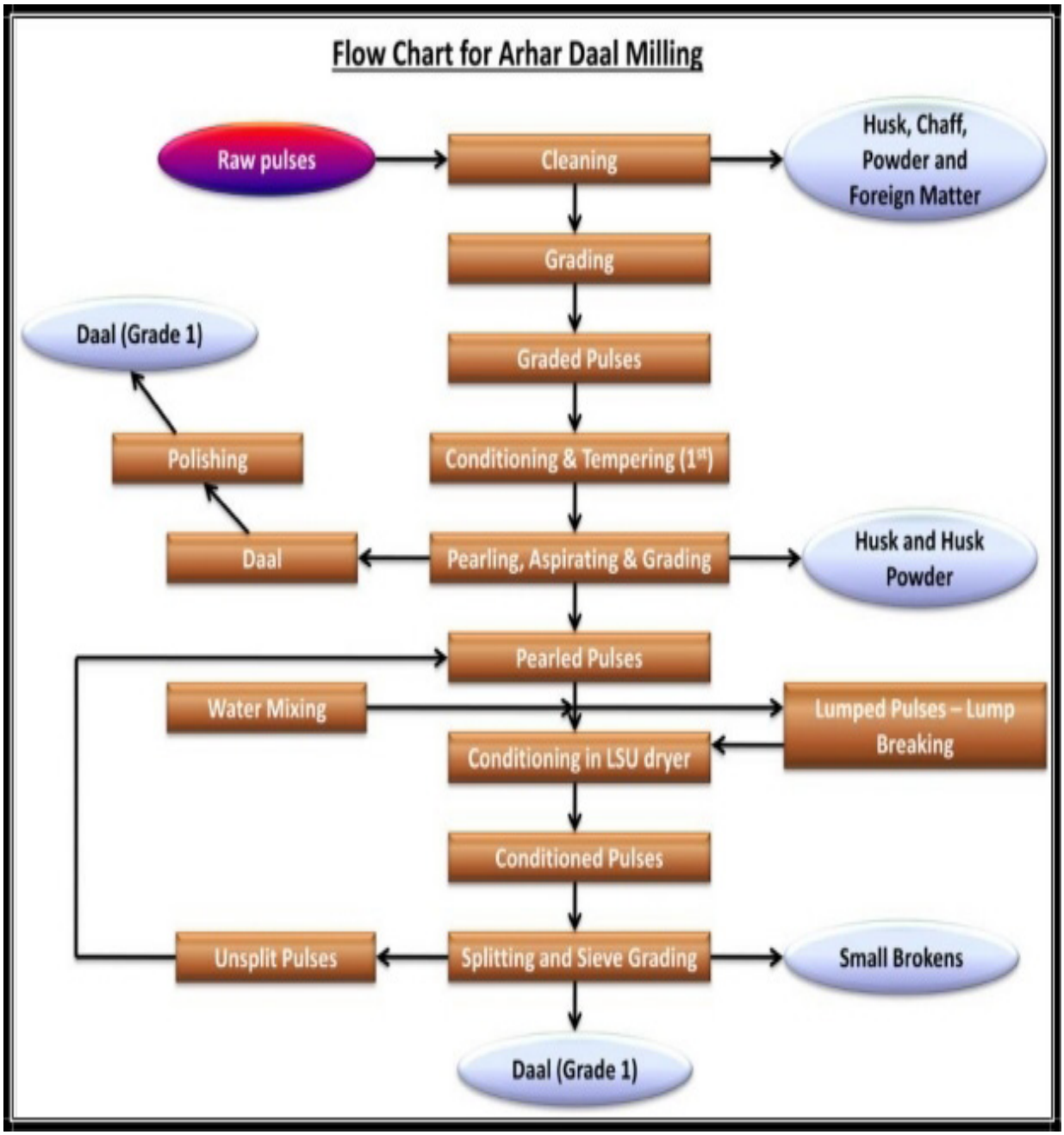
The above methods are traditional method and needs lot of time for processing. The latest technology developed by CFTRI is considered to be better than the above two methods. The improved milling process developed as several advantages like, high recovery of daal (80% compared to 70-75% in conventional method), reduced time of processing and hence lesser processing cost, independence from climate condition and the process is fully mechanized for round the clock production. It is thus suggested that an entrepreneur should adopt this method for processing of pulses. The steps for the process developed by CFTRI is given below:

- First step is to clean and grade the grains from soil and other organic matter
- They are passed through a de-stoner to ensure that stones are also removed
- Clean and graded grains are conditioned by dry heat treatment in 2 passes in LSU dryer with 120°C hot air
- Grains have to be tempered for 6 hours after completing each pass.
- The pre-conditioned pulses are conveyed to the pearler or dehusker where almost all pulses are dehusked in a single operation which are further separated from split pulses and mixture of husk, brokens, etc.
- Daal obtained at this stage is polished to give us grade 1 daal
- The gota (dehusked whole grain) are separated from split pulses and mixture of husk, brokens, etc. Water is added at controlled level to Gota and then collected and allowed to remain as such for about 1 hour.
- Some of the moistened grains which form lumps are fed to a lump breaker to break the lumps
- After breaking the lumps the grains are conditioned and split after drying in a LSU type dryer for few

hours followed by splitting in an emery roller and again sieved

- The same is then graded as grade 1 pulses, dehusked whole pulses and small brokens.
- The unsplit dehusked pulses are again fed to the conditioner for subsequent splitting.

A diagrammatic illustration of the process is given below:



SWOT Analysis

Strengths	Weakness
➢ It is part of the Indian Staple diet. In any household it has to be "Daal-Roti"or Daal"Chawal". It's a daily need product is every household. ➢ It is a rich source of plant based protein. ➢ Long shelf life of the product	➢ Large number of producers in the market making the competition tough
Opportunities	**Threats**
➢ People are moving towards organic food. Organic daal is being sold at a premium. If the same can be sourced, it could give a boost to the profitability. ➢ Similarly, Unpolished daal also is sold at a premium and could be an opportunity to diversify.	➢ Production has more or less remained stagnant which may lead to import dependency ➢ India produces 75% of Toor Daal but consumes 90% of the world production indicating dependency on imports ➢ The above factors could lead to short supply of raw material

Financial Aspects of the Project

Infrastructure required

Any project preparation is based on a set of assumptions made which are close to the market reality. List of such assumptions is given in Annexure 4. In this project the land used is assumed to be own land. For a 1 TPH daal mill the requirement of land will be around 0.5 acres. The major component of a daal milling unit is land, building, plant and machinery and civil works. It is comparatively labour intensive and would need around 80-90 people to manage the unit.

Land and its development

A plot of approximately 0.5 acres would be necessary for setting up a Daal Milling factory of this scale. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as non-agriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land.

Size of the unit

The capacity has been restricted to 8 tonnes per hour which would mean 2400 tonnes per annum. This itself would entail an investment of around 2.23 crores excluding land and working capital requirement.

Machineries and Equipment

Various machineries and equipments will be required for setting up the plant The list of such equipment and number of such units required for setting up a Daal Mill along with Miscellaneous fixed assets and transportation requirements for which investment has to be made is given below.

Processing Equipment cost				
Sl no.	**Machine**	**Unit**	**Unit Cost**	**Amount in Rs.**
1	Weighing machine (truck weighing-Dharam Kanta) 15 HP	1	750000	750000
2	Cleaner cum grader 5 HP	1	5000000	5000000
3	De-stoner 4 HP			
4	Conditioning chamber (Specially designed by CFTRI) 5 HP			
5	Blower 8 HP			
6	Horizontal air heater 15 HP			
7	Silo type perforated bins for tempering heated grains			
8	Pearling machine for removing husk 10 HP			
9	Aspiration system 6 HP			
10	Grader for daal and broken pieces 3 HP			
11	Water/oil mixer 1HP			
12	Lump breaker (Specially designed by			
13	Emery Roller 20 HP			
14	Daal splitter and elevators 20 HP			
15	100 KVA genset	1	900000	900000
16	Pouch Packaging Machine (to develop the brand for package sale of product) and weighing machine for 50 kg packets 5 HP	1	400000	400000
17	Miscellaneous Equipments and laboratory for testing	1	200000	200000
	Total cost of equipment			7250000
	Addl charges for GST, transportation, etc in Rs.		30%	2175000
	Total cost of equipment incl GST, etc. in Rs.			9425000

1. Prices quoted on Indiamart or companies are generally excluding GST, transportation charges, installation charges, travel cost and training as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
2. Based on the searches on Indiamart, it is observed that there are companies supplying all the equipments giving a single window solution. It is suggested that it would be better for an entrepreneur to buy all equipments from a single vendor because the following reasons.
    a. There will not be any mismatch between equipments and automation would be smoother.
    b. Single point of contact would not allow any blame game between vendors in case something goes wrong.

c. Power assessment would be better and line can be drawn accordingly

d. A single unit set up by any of these can be visited to get a clear overview.

e. Training would be much easier as it would from one agency

3. It is suggested that before purchasing equipments, as the technology being used is from CFTRI, it would be ideal to make a visit to CFTRI and get to know every detail of it including equipment suppliers because most of the cases equipment suppliers may be tied up with the equipments of the conventional methods.

4. Alternate power source in terms of DG set has been added. One 100 DG set would cost around Rs.9 lakh based on the power requirement assessed.

Miscellaneous fixed assets				
Sl. No.	**Particulars**	**Units**	**Unit cost in Rs.**	**Amount in Rs.**
1	Electrical and water Connection	1	1000000	1000000
2	Effluent Treatment Plant	1	1500000	1500000
3	Chairs	10	2000	20000
4	Table	2	5000	10000
5	Computer	2	50000	100000
6	Printer	1	15000	15000
	Total			**2645000**

Given the fact that the raw material would be procured from local wholesalers or from Indiamart, we need not stock raw material for more than a month. However, 90 days has been kept keeping in view possibility of procurement from farmers directly which would be cheaper and would also boost profits. For analysis, wholesale price has been taken to be on the conservative side. A prefabricated godown has hence been suggested. In all 0.25 acre will be sufficient for setting up the plant but for the purpose of keeping the options open for future expansion, which is a distinct possibility, it is suggested that a plot of 0.5 acre is kept for the project. The total building cost is given in table below:

Land and Building			
Particulars	**Area reqd (in sq/ft)**	**Rate/sqft in Rs.**	**Amount in Rs.**
Land cost	Own land - 0.5		0
Building cost @ 1430/-- per sq ft	5000	1430	7150000
Prefabricated godown	2000	234	468000
Total cost			**7618000**

In case of a daal mill, it would be essential to have your own transportation facility to transport tonnes of pulses to and fro. It would otherwise be a problem in the peak season as trucks would not be available at the crucial time hampering the procurement of pulses and dispatch of processed arhar or the husk as limited

storage space has been taken into consideration. Accordingly, it is felt that the Mill should have 3 transport vehicles of various capacity as given below.

Vehicles for Transportation of goods	Units	price in Rs.	Amount in Rs.
Eight to ten tonne capacity truck	1	2500000	2500000
4-5 tonne truck	2	1500000	3000000
Total			**5500000**

Project Timeline

The project to start off production would need around one year for implementation to be completed. The breakup for the same is given in table below:

Activities	Projected time required
Arrangement of finance	3 months
Building of premises/Acquisition of premises	6 months
Procurement of equipments	2 months
Recruitment of manpower	1 month
Training	1 month

As recruitment of manpower can be done along with procurement of equipment and the activity would not be part of the critical path, the total time taken would be 12 months for setting up the project and to reach a position to start production. Hence, one year moratorium has been taken. If “ready to move in” premises suitable for the project is acquired, then the timeline would come down by around 3 months. However, in this project it has been assumed that the unit will be set up in own land and costing has been done assuming the same. Timeline for implementation and moratorium accordingly has been kept for 12 months

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

Project Summary			
Project Cost excluding land in Rs.			**25188000**
Preoperative Expenses in Rs.			**251880**
Total Project Cost excluding land in Rs.			**25439880**
Own Contribution in Rs.			**10175952**
Estimated Bank loan in Rs.			**15263928**
Own Contribution in Lakh			**101.76**
Bank Loan in Rs. Lakh			**152.64**

In addition, interest cost of the first year will be capitalized as the project would need a moratorium for 12 months. This would increase the outstanding at the end of the first year.

Price of Raw material and finished goods

It is Imperative that there should be a basis for having a price for the raw material and finished goods. As per Indiamart, the bulk price of Arhar is around 95/kg. The same has been taken as the price of finished goods which comes to Rs.95000/- per tonne. It may be stated here that it has been suggested that small packaging with a brand name should be started as well. While the bulk sale is enough to make the unit profitable, the profitability of selling small, packaged product is much more. Branded Arhar is being sold anywhere between Rs.140/- to 150/- per kg. Given the scenario even if the entrepreneur starts of in the nearby local market at even 120/- per kg, it will have a positive impact on the profitability.

Working Capital requirement

Working capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated above from which working capital requirement is generated. In the following tables details of working capital requirement is assessed Capacity utilisation in the second year has been kept at a level of 65% as the market linkages has to be set up and brand must establish itself in the surrounding locality. Cost of raw material and sales revenue from sale of Arhar in the first five years of the project is expected to be as follows:

Pigeon pea and Packaging material requirement for 5 years					
Items ↓/ Period →	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation	0%	65%	70%	75%	80%
Raw material requirement per day in tonnes	0	5.2	5.6	6	6.4
Raw material required per year in tonnes	0	1560	1680	1800	1920
Rate per tonne in Rs.	0	52000	55900	60093	64600
Cost of packaging material per 50 kg	0	56	60.2	64.72	69.57
Total Cost in Rs. Lakh	**0**	**825.18**	**955.3**	**1100.31**	**1261.69**
Calculation of Sales					
Items ↓ / Period →	1st year	2nd year	3rd year	4th year	5th year
Production of processed Pigeon pea					
Opening Stock	0	0	124.8	134.4	144
Production in tonnes	0	1248	1344	1440	1536
Closing Stock	0.00	124.80	134.40	144.00	153.60
Net Sales in tonnes	0	1123.2	1334.4	1430.4	1526.4
Sales price per packet of 50 kg incl packaging	0	4806	5046	5298	5563
Sales value of processed Pigeon pea in Rs. Lakh	**0.00**	**1079.62**	**1346.68**	**1515.65**	**1698.27**

By-products					
Husk Production in tonnes	0	117	126	135	144
Husk Rate per tonne	0	18000	19350	20801	22361
Total sale of husk in Lakh	**0**	**21.06**	**24.38**	**28.08**	**32.2**
Total revenue from Sales in Lakh	**0**	**1100.68**	**1371.06**	**1543.73**	**1730.47**

Working capital requirement has to be evaluated based on the aforementioned details. The same is given in the table below:

Working Capital Assessment					
Computation of value of closing stock and working capital requirement					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Finished goods inventory in tonnes	0	124.8	134.4	144	153.6
price of finished good/50 kg in Rs. including packaging material	0	4806	5046	5298	5563
Total finished goods stock price in Rs.	0	11995776	13563648	15258240	17089536
Raw material inventory in tonne	0	468	504	540	576
price of Raw Material/tonne in Rs.	0	52000	55900	60093	64600
Packaging Material per 50 kg	0	56	60.2	64.72	69.57
Total Raw Material Stock price	0	24755328	28659053	33009401	37850757
Total value of stock in Rs.	0	36751104	42222701	48267641	54940293
Amount in Lakh	0	367.51	422.23	482.68	549.4
Less Creditors in lakh	0	110.25	126.67	144.8	164.82
Paid Stock in lakh	0	257.26	295.56	337.88	384.58
Add sundry debtors in lakh	0	55.13	63.33	72.4	82.41
Total	**0**	**312.39**	**358.89**	**410.28**	**466.99**
Own contribution @ 25%	**0**	**78.1**	**89.72**	**102.57**	**116.75**
Working Capital requirement*	**0**	**234.29**	**269.17**	**307.71**	**350.24**
*** WC requirement has been taken based on the requirement of the second year as the first year would be treated as moratorium period for setting up the project.**					

The project is expected to generate sufficient cash and working capital limit is pegged at the requirement of the second year, first year being the moratorium for setting up the factory.

Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, rental charges for the premises and electricity charges. The details of these expenses are given below:

Labour and Staff Salary/wages				
Particulars	**Wages/ Salary per month**	**No. of employees**	**Total Salary per month in Rs.**	**Annual Salary in Rs.**
Manager	30000	1	30000	360000
Accountant	25000	1	25000	300000
Helper	10000	1	10000	120000
Plant Operator	20000	1	20000	240000
Skilled labour	15000	1	15000	180000
Unskilled labour	10000	4	40000	480000
Total Salary in Rs.			**140000**	**1680000**

Projected Salary Expenses					
Salary expenses Projection	1st year	2nd year	3rd year	4th year	5th year
Annual Salary expenses in Rs.	0	1680000	1848000	2032800	2236080
Salary expenses rounded off to lakhs	**0**	**16.8**	**18.48**	**20.33**	**22.36**
Electricity Charges					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation	**0%**	**65%**	**70%**	**75%**	**80%**
Consumption of power per day in units	0	416	448	480	512
Rate per unit in Rs.	9.00	9.00	9.00	9.00	9.00
Power bill per month in Rs.	0	93600	100800	108000	115200
Total power bill per year	**0**	**1123200**	**1209600**	**1296000**	**1382400**
Power bill in Rs. Lakh	**0**	**11.23**	**12.1**	**12.96**	**13.82**
Packaging Cost					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Cost of Packaging per unit (50 kg)	0	56	60.2	64.72	69.57
Total Production in kg	0	1248000	1344000	1440000	1536000
Packaging cost in Rs. Lakh	**0.00**	**13.98**	**16.18**	**18.64**	**21.37**
Selling, transportation and administrative expenses in Rs.					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Sales and branding expenses per annum	0	1000000	1000000	1000000	1000000
Admin Expenses	0	480000	480000	480000	480000
Transportation charges	0	2400000	2400000	2400000	2400000
Total Expenditure on Sales, Admin & Transportation	**0**	**3880000**	**3880000**	**3880000**	**3880000**

All these costs will be factored in later in the report while evaluating the financial benefits of the project

Depreciation

The depreciation calculation is as follows:

Depreciation Calculation					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Total value of equipments & vehicles in Rs.	0	17570000	14934500	12694325	10790176
Depreciation @15% in Rs.	**0**	**2635500**	**2240175**	**1904149**	**1618526**
Value at the end of the year to be carried forward in Rs.	0	14934500	12694325	10790176	9171650
Total Value of building in Rs.	0	7618000	6856200	6170580	5553522
Depreciation of building@10%	**0**	**761800**	**685620**	**617058**	**555352**
Value at the end of the year to be carried forward in Rs.	0	6856200	6170580	5553522	4998170
Total depreciation	**0**	**3397300**	**2925795**	**2521207**	**2173878**
Total depn in Rs. Lakh	0	33.97	29.26	25.21	21.74

Repairs and maintenance

In case of new equipments including computers, generally they give a warranty for one year. Thus, the maintenance cost would be starting from the second year onwards. The same in general is given at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

Cost of Maintenance	
Particulars	**Amount**
Total fixed cost (equipment & vehicle)	17570000
Maintenance cost in percentage	20%
Cost of Maintenance	3514000
Maintenance cost in Rs. Lakh	35.14

Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

Cost of The Project	
	(in Rs. Lakh)
Particulars	**Amount**
Land & Building*	76.18
Plant & Machinery	94.25
Misc. Items, transport vehicles & Pre Op. Exp	83.97
Working Capital	312.39
Total	566.79
*Land is assumed as own land and hence cost taken is 0	
Means of Finance	
	(in Rs. Lakh)
Particulars	**Amount**
Own Contribution	101.76
Term Loan from Bank	152.64
Working Capital Own contribution	78.10
Working Capital	234.29
total	566.79

The detailed repayment schedule of the term loan is indicated in Annexure 5. The interest for the first year is capitalized and loan outstanding accordingly increased in the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may not be necessary as the project should be able to generate sufficient profits and the internal accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

Year-wise Interest on Bank Loan					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Interest on Term Loan in Rs.*	0	1650182	1184248	718314	252382
Interest on Term Loan in Rs. Lakh	0.00	16.50	11.84	7.18	2.52
Interest on working Capital	0	25.77	25.77	25.77	25.77
Principal Repayment in Rs.	0	4235760	4235760	4235760	4235760
Principal Repayment in Rs. Lakh	0.00	42.36	42.36	42.36	42.36
Balance outstanding - end of the year	169.43	127.07	84.71	42.35	0.00
* Interest on term loan has been capitalisedfor 12 months leading to increase in the capital outlay. This has been done to account for the 12 month moratorium.					

Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented above in the series of tables. Accordingly, the projected Profit and loss account, Balance sheet, and

cash flow statement along with breakeven analysis is presented in the tables below. During the moratorium period the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over a period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

Projected P&L Statement					
					(in Rs. Lakh)
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation%	0%	65%	70%	75%	80%
Gross Sale of processed Pigeon pea & by-products	0	1079.62	1346.68	1515.65	1698.27
Total	**0**	**1100.68**	**1371.06**	**1543.73**	**1730.47**
Cost of Production					
Raw Material Consumed	0	811.2	939.12	1081.67	1240.32
Electricity Charges	0	11.23	12.1	12.96	13.82
Depreciation	0	33.97	29.26	25.21	21.74
Salary and wages	0	16.8	18.48	20.33	22.36
Repair and Maintenance	0	35.14	35.14	35.14	35.14
Packaging	0	13.98	16.18	18.64	21.37
Selling & Admn Expenses	0	38.80	38.80	38.80	38.80
Total Cost of Production	**0**	**961.12**	**1089.08**	**1232.75**	**1393.55**
Profit before interest and taxes	**0**	**139.56**	**281.98**	**310.98**	**336.92**
Interest on Term Loan*	0.00	16.50	11.84	7.18	2.52
Interest on Working Capital	0	25.77	25.77	25.77	25.77
Total Interest Payment	**0.00**	**42.27**	**37.61**	**32.95**	**28.29**
Profit before Tax	0.00	97.29	244.37	278.03	308.63
Income Tax	0	24.32	61.09	69.51	77.16
Net profit after tax	**0.00**	**72.97**	**183.28**	**208.52**	**231.47**
Term loan interest for first year capitalised to account for the moratorium					

As can be seen, the unit would be in profits after tax from second year onwards. The project has enough profit even at 65% capacity utilization.

Projected Balance Sheet					
					Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Liabilities					
Capital					
Opening Balance	0	101.76	252.83	436.11	644.63
Own Capital Contribution	101.76	78.10			
Retained Earnings	0.00	72.97	183.28	208.52	231.47
Total-Closing Balance	**101.76**	**252.83**	**436.11**	**644.63**	**876.1**
Term Loan	169.43	127.07	84.71	42.35	0.00
Working Capital Limit	0.00	234.29	234.29	234.29	234.29
Sundry Creditors	0	110.25	126.67	144.8	164.82
Total Liabilities	**271.19**	**724.44**	**881.78**	**1066.07**	**1275.21**
Assets					
Fixed Assets	254.4	254.4	254.4	254.4	254.4
Gross Depreciation	0	33.97	63.23	88.44	110.18
Net Fixed Assets	**254.4**	**220.43**	**191.17**	**165.96**	**144.22**
Sundry Debtors	0	55.13	63.33	72.4	82.41
Stock in Hand	0	367.51	422.23	482.68	549.4
Interest capitalised	16.79	0	0	0	0
Cash and Bank Balance	0	81.37	205.05	345.03	499.18
Total Assets	**271.19**	**724.44**	**881.78**	**1066.07**	**1275.21**

The project is generating healthy profit from second year with the first year being moratorium as presented above. The breakeven analysis indicates the level of operation at which the operations will breakeven and not have any loss. It becomes important to identify the fixed and the variable costs. Even within variable component there is always a part which is fixed. For example, even if the plant is not running there will be lights and fans which will be used for administrative work, people will have to be paid salary for those days as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost÷Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 21% capacity utilisation.

Breakeven Point Analysis		
		Rs. In Lakh
Total Sale (Sales - opening WIP + closing WIP)	**Year 1**	**Year 2**
Net Sales	0.00	1100.68
Less: Opening Stock	0.00	0.00
Add: Closing Stock	0.00	119.96
Total Production/Sales	**0.00**	**1220.64**
Variable Expenses		
Raw Material and Packaging	0.00	825.18
Interest on working Capital	0.00	25.77
Repair and Maintenance	0.00	8.79
Salary expenses	0.00	1.68
Sales & Admin Expenses	0.00	5.82
Energy - Electricity	0.00	11.01
Total	**0.00**	**878.25**
Contribution	**0.00**	**342.39**
Contribution per unit (per tonne)	**NA**	**30483.44**
Fixed expenses		
Interest on Term Loan	0.00	16.50
Repair and Maintenance	0.00	26.35
Salary expenses	0.00	15.12
Sales & Admin Expenses	0.00	32.98
Energy - Electricity	0.00	0.22
Depreciation	0.00	33.97
Total	**0.00**	**125.14**
Capacity utilisation	0%	65%
Operating Profit	**0.00**	**217.25**
Breakeven point in physical units (tonnes)	**NA**	**411**
Breakeven point in capacity utilisation (%)	**NA**	**21%**

Cash Flow Statement					
					Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Sources of Fund					
Own margin	101.76	78.10			
Profit Before Interest and Tax	0.00	139.56	281.98	310.98	336.92
Depreciation	0.00	33.97	29.26	25.21	21.74
Working Capital accretion	0.00	234.29	0.00	0.00	0.00
Term Loan accretion	152.64	16.79	0.00	0.00	0.00
Creditors	0.00	110.25	16.42	18.13	20.02
Total	**254.40**	**612.96**	**327.66**	**354.32**	**378.68**
Uses of Fund					
Fixed Assets	254.40	0.00	0.00	0.00	0.00
Stock in Trade - Accretion	0.00	367.51	54.72	60.45	66.72
Debtors - Accretion	0.00	55.13	8.20	9.07	10.01
Repayment of term Loan	0.00	42.36	42.36	42.36	42.36
Interest on Term Loan	0.00	16.50	11.84	7.18	2.52
Interest on working capital	0.00	25.77	25.77	25.77	25.77
Income Tax	0.00	24.32	61.09	69.51	77.16
Accretion in cash & bank balance	0.00	81.37	123.68	139.98	154.14
Total	**254.40**	**612.96**	**327.66**	**354.32**	**378.68**

The cash flow statement above indicates that chance of any problem with the cash is very little or so to say practically nil in the project. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the same, sudden problem with supply of raw material or shipment not arriving, etc. Now these are unforeseen risk which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to have that.

Calculation of DSCR					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Cash Accruals					
Depreciation	0	33.97	29.26	25.21	21.74
Profit before interest and taxes	0	139.56	281.98	310.98	336.92
Total	**0**	**173.53**	**311.24**	**336.19**	**358.66**
Repayments					
Interest on Term Loan	0.00	16.50	11.84	7.18	2.52
Term Loan Instalments	0.00	42.36	42.36	42.36	42.36
Total	**0.00**	**58.86**	**54.20**	**49.54**	**44.88**
Debt Service Coverage Ratio	**NA**	**2.95**	**5.74**	**6.79**	**7.99**

The debt service coverage ratio from second year is 2.95 and above indicating that the project should not have any problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is a healthy 1.18 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 880.93 lakh. And the internal rate of return comes to 98% which essentially indicates that at 98% discount rate the net present value of net benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

BC Ratio, NPV and IRR								**(Amt in Rs. Lakh)**
Costs and revenue items	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**	**6th year**	**7th year**	**8th year**
Fixed Costs	254.40							
Variable costs								
Raw material	0	825.18	955.3	1100.31	1261.69	1356.32	1458.04	1567.39
Salary	0	16.8	18.48	20.33	22.36	24.6	27.06	29.76
Electricity	0	11.23	12.1	12.96	13.82	13.82	13.82	13.82
Maintenance	0	35.14	35.14	35.14	35.14	35.14	35.14	35.14
Sales and Admin exp	0	38.8	38.8	38.8	38.8	38.8	38.8	38.8
Total Costs	**254.40**	**927.15**	**1059.82**	**1207.54**	**1371.81**	**1468.68**	**1572.86**	**1684.91**
Rate of discount	15%							
Present value of costs	4768.62							
Revenues								
Sale of finished goods								
sale of processed Pigeon pea		1079.62	1346.68	1515.65	1698.27	1794.36	1884.06	1978.37
sale of husk		21.06	24.38	28.08	32.20	34.61	37.21	40.00
Total	**0**	**1100.68**	**1371.06**	**1543.73**	**1730.47**	**1828.97**	**1921.27**	**2018.37**
Rate of discount	15%							
Present value of benefits	5649.55							
BC Ratio	1.18							
Net Benefits	-254.4	173.53	311.24	336.19	358.66	360.29	348.41	333.46
Rate of discount	15%							
NPV	880.93							
IRR	98%							

Registration/Certification

There are four registrations necessary for MSMEs which are involved in food proceesing. A brief on the same is given below:

1. **GST**: GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central government is being linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by GoI.
   (https://reg.gst.gov.in/registration/)
2. **FSSAI:** The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards operating procedures, food safety norms, packaging & labeling norms. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India. The registration can be done at FSSAI website. (https://fssai.gov.in/cms/registration.php)
3. **UDYAM:** The entrepreneur may consider getting himself registered in UDYAM.
   (https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm).
4. **ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging along with FSSAI registration. Various agencies are there doing this job of certification. One such site available is https://legalwaycertification.com/iso/. There are many other such agencies that have been authorized to issue ISO certification.

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required. For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year.

In addition to the ones stated above, it would be necessary to take fire and pollution control clearance, MSME registration, Daal Mill Udyog license, PF and ESIC registration and IEC registration for exports. It would also be advisable choose a brand name for the product and secure the name with trademark.

Having a trademark is useful is necessary for direct marketing as well as exports.

Model Project Report on

Maize Processing

Processing of Maize

Introduction

Maize is the third most important cereal in India. West Bengal is ranked 7th in the production of Maize as per the production data available for the year 2019-20. West Bengal produced 20.08 lakh tonnes of maize during the year 2019-20. State-wise production data for the year 2019-20 is given in Annexure 1. This increase in production has happened over the last few years with the focus given by the state government for increasing maize production in state. Maize is not only used for human consumption but also is an important component of poultry and cattle feeds. As the production increases, there is a need to have processing industry linked to it so as to provide forward linkage to the farmers. This would in turn enable them to get a good price for the produce. Maize can be processed into various items of which one of the important one is maize starch.

Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The Proforma for promoter detail is given in Annexure – 2.

History of the company

The project has been prepared as if a new set up is being made for the purpose of cornflakes processing the same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained/presented in the project report. Proforma for company report is given in Annexure-3.

Finished product and its utility

Maize starch is a component regularly used for human consumption and used heavily by the Food and Beverage Industry. Most commonly known as corn starch, maize starch is used in bakery industry, as well as for thickening sauces, puddings, and gravies. Then there is ice cream. Maize starch powder is known for giving high strengths to ice cream and ice cream cones too! It is also used as salad dressing, desserts and other such sweet food items of which it forms a basic constituent. It is also used as a coating for fried foods to give them extra crispiness. The starch is also used for noodles and as an emulsifier for milk-products, as well as a filling for food items. It is also used in

1. Paper industry - to enhance the bonding strength of paper as well as corrugated boxes,
2. Textile industry - to soften fabric as well as providing cloth with the required stiffness,
3. Pharmaceutical Industry - used as filler, diluents, humectants, binder and disintegrant; and also for

4. Bioplastics - Bioplastics are currently used in disposable items like packaging, cups, straws, bags etc. Bioplastics is typically made from the sugars in corn starch and is biodegradable, carbonneutral and edible.

Along with maize starch there are three products which come out as byproduct viz.,

a. Maize germ which can be used for oil extraction,

b. maize fibre which is used as cattle feed, and

c. maize gluten which is a fiber-rich ingredient, containing significant amounts of nutritious protein and starch. It is used as a feed additive in cattle diets as a source of energy and protein that is beneficial to digestion and absorption. It's the only effective natural pre-emergent herbicide in turfgrass industry.

Market, Demand and Major Competitors

Based on the type of uses mentioned above, it is apparent that the demand for maize starch for various industries including food processing industry is huge and would keep on increasing. With changes in lifestyle specially people going in for processed food more and more, the demand in the food industry is multiplying. The situation is same in pharmaceutical and paper industry. Bio-plastics is becoming more and more popular with people becoming the hazards of using plastics. Given these circumstances, it is felt that investment in maize processing will not only be beneficial for the society but also profitable.

Raw Material Requirement

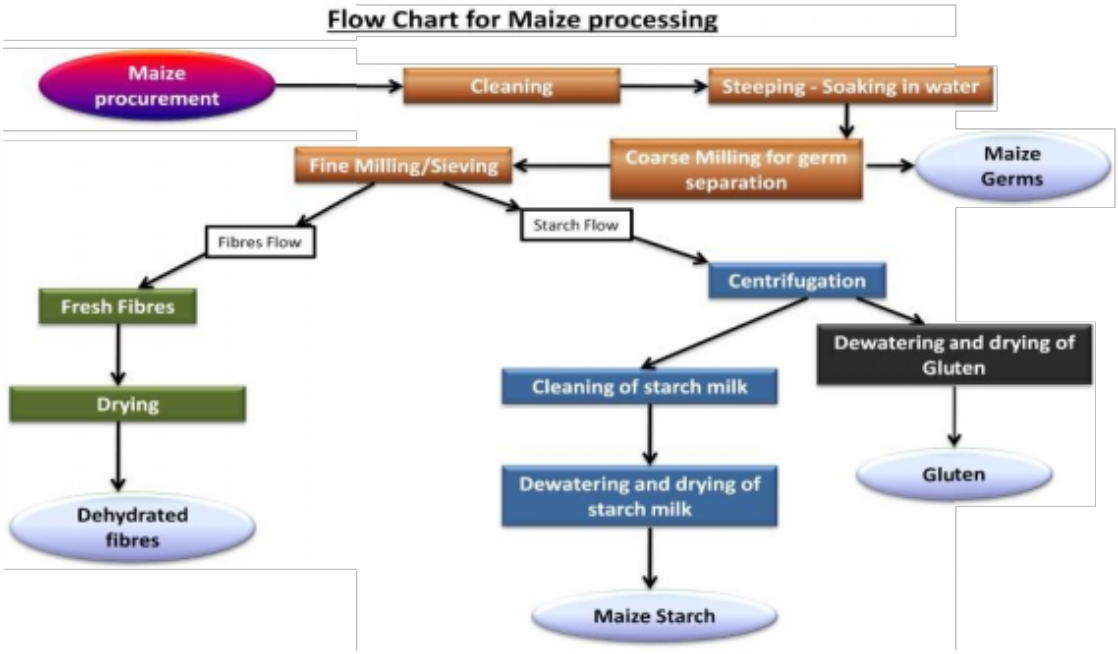
The only raw material required if one wants to produce corn starch is maize. It is a seasonal crop and needs to be purchased at a time when the price is low so as to maximize profits. This would necessitate having storage arrangements as well because it would be best to procure the same when the prices are at its lowest. This would also necessitate high requirement of working capital as procurement of raw material will have to be done once in a year. The cost benefit of the same has to be judged by the investor carefully based on where the unit is set up. West Bengal government has decided to raise cultivation of maize in the state by 33% from the current 15 lakh metric tonnes per year to 20 lakh metric tonnes in two years time. The further stress on improving maize production comes after the state government won the Krishi Karman Award this year for improvement in maize production in the country. This award has proved the big potential that the state has to become one of the biggest producers of the crop in the country. Given this scenario raw material supply should not be a problem. Moreover, in this project, the intention is to directly procure corn kernels as procuring whole cobs would unnecessarily increase the transportation cost and cost of managing the waste material.

Manufacturing Process

There are various processes which were being used for rice milling. However, things have been standardized over the years and the process followed in general is given below:

- Maize is procured from the market in kernel form.

- The same is destined and washed clean
- After that it is steeped in water
- Coarse milling of kernel is done to remove the maize germs which itself is a useful byproduct
- Fine milling and sieving is done next leading to creation of two channels viz., starch flow on one end and fibre on the other
- Starch flow is put through centrifugation to separate the gluten and starch milk which is again cleaned
- Starch milk and gluten are both dewatered and dried giving the output of starch powder and gluten
- The fibre is also dried and gives the output of dehydrated fibres.



SWOT Analysis

Strengths ➢ Multiple usage of the products as stated above ➢ There is practically no wastage as 4 products are obtained from the process	**Weakness** ➢ Seasonal crop and hence large storage space is a necessity and could l;ead to wastage if the demand for the produce does not come up as expected
Opportunities ➢ Can consider vertical integration and produce bio-degradable plastics which could be in big demand as more and more restrictions are coming up with plastic usage	**Threats** ➢ While production in West Bengal is on the increase, shortage of raw material supply could create a problem ➢ Technology upgradation is a must from time to time to ward off threat from technology.

Financial Aspects of the Project

Infrastructure requirement

Any project preparation is based on a set of assumptions made which are close to the market reality. List of such assumptions is given in Annexure 4. In this project the land used is assumed to be own land. For a 4 TPD maize processing unit would need 1 acre land keeping in view the storage requirements. The major component of a maize processing unit is land, building, plant and machinery and civil works.

Land and its development

A plot of approximately 1 acre would be necessary for setting up a maize processing factory of this scale. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as non-agriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land.

Size of the unit

The capacity has been restricted to 4 TPD which would mean (taking two shifts per day) 1200 tonnes of maize per annum. This itself would entail an investment of around 3 crore excluding land and working capital requirement.

Machineries and Equipment

Various machineries and equipments will be required for setting up the plant The list of such equipment and number of such units required for setting up a maize processing unit along with Miscellaneous fixed assets and transportation requirements for which investment has to be made is given below.

Effluent treatment is a necessity in any industrial setup. In this case also it would be necessary mainly to take care of the wastewater coming out after washing, cleaning, etc. The same can be treated and recycled also. As it would be mostly starch and dirt which needs to be taken care of from the waste water, an investment of around 7 lakh for wastewater recycling plant should be sufficient.

Processing Equipment cost				
Sl no.	**Machine**	**Unit**	**Unit Cost**	**Amount in Rs.**
1	Weighing machine (truck weighing-Dharam Kanta)	1	11500000	11500000
2	Destoner 3 HP			
3	Corn washing machine 2 HP			
4	Corn milling equipment (3 stage) 15 HP			
5	Seiving equipment 2 HP			
6	De-sanding machine 3 HP			
7	Hydrocyclone equipment 8 HP			
8	Dewatering machine 2 HP			
9	Flash Dryer 5 HP			
10	Packaging equipment 1 HP			
11	conveyors/escalators 5 HP			
12	Water recycling/Effluent Treatment facility			
13	Misc Equipments and a testing lab	1	200000	200000
14	50 KVA Diesel Genset	1	410000	410000
	Total cost of equipment			12110000
	Addl charges for GST, transportation, etc		30%	3633000
	Total cost of equipment incl GST, etc.			15743000

1. Prices quoted on Indiamart or companies are generally excluding GST, Transportation charges, installation charges, travel cost and training as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
2. Based on the searches on Indiamart and other websites, it is observed that there are companies supplying all the equipments giving a single window solution. It is suggested that it would be better for an entrepreneur to buy all equipments from a single vendor because the following reasons.
    a. There will not be any mismatch between equipments and automation would be smoother.
    b. Single point of contact would not allow any blame game between vendors in case something goes wrong.
    c. Power assessment would be better and line can be drawn accordingly
    d. A single unit set up by any of these can be visited to get a clear overview.
    e. Training would be much easier as it would from one agency

Miscellaneous fixed assets				
Sl. No.	**Particulars**	**Units (NOA)**	**Unit cost in Rs.**	**Amount in Rs.**
1	Electrical and water Connection	1	1000000	1000000
2	Chairs	11	2000	22000
3	Table	2	5000	10000
4	Computer	2	50000	100000
5	Printer	1	15000	15000
	Total			**1147000**

Given the fact that the raw material would have to be stored there would be a necessity to have storage space in the form of storage godown. The total building cost is given in table below:

Land and Building			
Particulars	**Area reqd (in sq/ft)**	**Rate/sqft in Rs.**	**Amount in Rs.**
Land cost	Own land - 1 acre		0
Building cost @ Rs. 1430/-- per sq ft	3000	1430	4290000
Prefabricated godown for 25000 sq ft.	15000	234	3510000
Total cost			**7800000**

In case of a maize processing unit, it would be essential to have your own transportation facility to transport tonnes of maize and maize starch and the byproducts to and fro. It would otherwise be a problem in the peak season as trucks would not be available at the crucial time hampering the procurement of paddy and dispatch of processed material. Accordingly it is felt that the unit may have 4 transport vehicles of various capacity as given below.

Vehicles for Transportation of goods	**Units**	**Price (in Rs.)**	**Amount (in Rs.)**
Eight to ten tonne capacity truck	1	2500000	2500000
4-5 tonne truck	2	1500000	3000000
Small transport vehicle (1 tonne)	1	800000	800000
Total			**6300000**

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

Project Summary			
Project Cost excluding land in Rs.			30990000
Pre-operative Expenses in Rs.			309900
Total Project Cost excluding land in Rs.			31299900
Own Contribution in Rs.			12519960
Estimated Bank loan in Rs.			18779940
Own Contribution in Lakh			**125.20**
Bank Loan in Lakh			**187.80**

In addition interest cost of the first year will be capitalized as the project would need a moratorium for 12 months. This would increase the outstanding at the end of the first year.

Project Timeline

The project to start off production would need around one year for implementation to be completed. The breakup for the same is given in table below:

Activity	Projected time period
Arrangement of finance	3 months
Building of premises/Acquisition of premises	6 months
Procurement of equipments	2 months
Recruitment of manpower	1 month
Training	1 month

As recruitment of manpower can be done along with procurement of equipment and the activity would not be part of the critical path, the total time taken would be 12 months for setting up the project and to reach a position to start production. Hence, one year moratorium has been taken.

Price of Raw material and finished goods

The price of raw material has been taken at Rs.35000/- per tonne based on wholesale rates available on the internet. Finished goods rate depend on in what channel the product would be sold. Bulk sale would fetch lesser price while selling in smaller packaging specially for human consumption sells at a much higher price. The price range varies from Rs.39/- per kg to even Rs.299/- per kg. Hence it was felt that it would be better to take a price somewhere in the mid range for the whole production at Rs.155 per kg. The packaging size has also been kept at 1 kg. In fact we can also go in for bulk packaging of 50 kg which would save on packaging cost. However, for the project only 1 kg packaging has been taken essentially making the estimates more conservative. It has also been assumed that 55% of the produce will be sold in bulk (at Rs.39/-) and 45% of it will be sold in packets of 1 kg (at Rs.299/-) to arrive at the price of Rs.155 per kg. Online selling and also through developing contacts specially in the food processing and hotel industry would be the major channels for sale of produce.

Working Capital requirement

Working capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated above from which working capital requirement is generated. In the following tables details of working capital requirement is assessed.

Capacity utilisation in the second year has been kept at a level of 65% as the market linkages has to be set up and brand has to establish itself in the surrounding locality. Cost of raw material and sales revenue from sale

of Rice and its byproducts in the first five years of the project is expected to be as follows:

Paddy and Packaging material requirement for 5 years					
Items ↓ / Period →	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation	0%	65%	70%	75%	80%
Raw material requirement per day in tonnes	0	2.6	2.8	3	3.2
Raw material required per year in tonnes	0	780	840	900	960
Rate per tonne in Rs.	0	35000	37625	40447	43481
Cost of packaging material per 50 kg	0	5	5.38	5.78	6.21
Total Cost in Rs. Lakh	**0**	**301.08**	**348.59**	**401.48**	**460.34**

Calculation of Sales					
Items ↓ / Period →	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Production of corn starch					
Opening Stock	0	0	56.16	60.48	64.8
Production in tonnes	0	561.6	604.8	648	691.2
Closing Stock	0.00	56.16	60.48	64.80	69.12
Net Sales in tonnes	0	505.44	600.48	643.68	686.88
Sales price per packet of 50 kg incl packaging	0	155	163	171	180
Sales value of corn starch in Rs. Lakh	**0.00**	**783.43**	**978.78**	**1100.69**	**1236.38**
By-products					
Opening Stock of Corn Bran/fibre in tonnes	0	0	11	12	13
Bran/fibre production in tonnes	0	109.2	117.6	126	134.4
Bran/fibre Rate per tonne	0	15000	16125	17334	18634
Closing Stock in tonnes	0	11	12	13	13
Net sale in tonnes		98	117	125	134
Total sale of maize bran in Rs. Lakh	**0**	**14.74**	**18.83**	**21.7**	**24.89**
Germ Production in tonnes	0	39	42	45	48
Germ Rate per tonne	0	50000.00	53750	57781	62115
Total sale of maize germ in Rs. Lakh	**0**	**19.5**	**22.58**	**26**	**29.82**
Corn Gluten Production in tonnes	0	70.2	75.6	81	86.4
Price of corn gluten per tonne	0	44000	47300	50848	54662
Total sale of maize Gluten in Lakh	**0**	**30.89**	**35.76**	**41.19**	**47.23**
Total value of byproduct sales in Lakh	**0**	**65.13**	**77.17**	**88.89**	**101.94**
Total revenue from Sales in Lakh	**0**	**848.56**	**1055.95**	**1189.58**	**1338.32**

Working capital requirement has to be evaluated based on the above mentioned details. The same is given in the table below:

Working Capital Assessment					
Computation of value of closing stock and working capital requirement					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Finished goods inventory in tonnes	0	56.16	60.48	64.8	69.12
Price of finished good/kg in Rs. including packaging material	0	155	163	171	180
Total finished goods stock price in Rs.	0	8704800	9858240	11080800	12441600
Raw material inventory in tonne	0	78	84	90	96
Price of Raw Material/tonne in Rs.	0	35000	37625	40447	43481
Packaging Material per kg	0	5	5.38	5.78	6.21
Total Raw Material Stock Price	0	3010800	3485882	4014774	4603411
Total value of stock in Rs.	0	11715600	13344122	15095574	17045011
Amount in Lakh	0	117.16	133.44	150.96	170.45
Less Creditors in lakh	0	35.15	40.03	45.29	51.14
Paid Stock in lakh	0	82.01	93.41	105.67	119.31
Add sundry debtors in lakh	0	17.57	20.02	22.64	25.57
Total	**0**	**99.58**	**113.43**	**128.31**	**144.88**
Own contribution @ 25%	**0**	**24.9**	**28.36**	**32.08**	**36.22**
Working Capital requirement*	**0**	**74.68**	**85.07**	**96.23**	**108.66**
* **WC requirement has been taken based on the requirement of the second year as the first year would be treated as moratorium period for setting up the project.**					

The project is expected to generate sufficient cash and working capital limit is pegged at the requirement of the second year, first year being the moratorium for setting up the factory.

Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, rental charges for the premises and electricity charges. The details of these expenses are given below:

Labour and Staff Salary/wages				
Particulars	**Wages/ Salary per month**	**No. of employees**	**Total Salary per month in Rs.**	**Annual Salary in Rs.**
Manager	30000	1	30000	360000
Accountant	25000	1	25000	300000
Helper	10000	1	10000	120000
Plant Operator	20000	2	40000	480000
Skilled labour	15000	6	90000	1080000
Unskilled labour	10000	30	300000	3600000
Total Salary			**495000**	**5940000**

Projected Salary Expenses					
Salary expenses Projection	1st year	2nd year	3rd year	4th year	5th year
Annual Salary expenses (in Rs.)	0	5940000	6534000	7187400	7906140
Salary expenses rounded off to lakhs	**0**	**59.4**	**65.34**	**71.87**	**79.06**
Electricity Charges					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation	**0%**	**65%**	**70%**	**75%**	**80%**
Consumption of power per day in units	0	520	560	600	640
Rate per unit in Rs.	9.00	9.00	9.00	9.00	9.00
Power bill per month in Rs.	0	117000	126000	135000	144000
Total power bill per year	**0**	**1404000**	**1512000**	**1620000**	**1728000**
Power bill in Rs. Lakh	**0**	**14.04**	**15.12**	**16.2**	**17.28**
Packaging Cost					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Cost of Packaging per unit (1 kg)	0	5	5.38	5.78	6.21
Total Production in kg	0	561600	604800	648000	691200
Packaging cost in Rs. Lakh	**0.00**	**28.08**	**32.54**	**37.45**	**42.92**
Selling, transportation and administrative expenses					**In Rs.**
Particulars	1st year	2nd year	3rd year	4th year	5th year
Sales and branding expenses per annum	0	2000000	2000000	2000000	2000000
Admin Expenses	0	480000	480000	480000	480000
Transportation charges	0	2400000	2400000	2400000	2400000
Total Expenditure on Sales, Admin & Transportation	**0**	**4880000**	**4880000**	**4880000**	**4880000**

All these costs will be factored in later in the report while evaluating the financial benefits of the project

Depreciation

The depreciation calculation is as follows:

Depreciation Calculation					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Total value of equipments & vehicles (in Rs.)	0	23190000	19711500	16754775	14241559
Depreciation @15% (in Rs.)	**0**	**3478500**	**2956725**	**2513216**	**2136234**
Value at the end of the year to be carried forward (in Rs.)	0	19711500	16754775	14241559	12105325
Total Value of building (in Rs.)	0	7800000	7020000	6318000	5686200
Depreciation of building@10% (in Rs.)	**0**	**780000**	**702000**	**631800**	**568620**
Value at the end of the year to be carried forward (in Rs.)	0	7020000	6318000	5686200	5117580
Total depreciation (in Rs.)	**0**	**4258500**	**3658725**	**3145016**	**2704854**
Total depn in Lakh	0	42.59	36.59	31.45	27.05

Repairs and maintenance

In case of new equipments including computers, generally they give a warranty for one year. Thus the maintenance cost would be starting from the second year onwards. The same in general is given at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

Cost of Maintenance	
Particulars	**Amount**
Total fixed cost (equipment & vehicle)	23190000
Maintenance cost in percentage	20%
Cost of Maintenance	4638000
Maintenance cost in Rs. Lakh	46.38

Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

Cost of The Project	
	(in Rs. Lakh)
Particulars	**Amount**
Land & Building*	78
Plant & Machinery	157.43
Misc. Items , transport, & Pre-op Exp.	77.57
Working Capital	99.58
Total	412.58
*Land is assumed as own land and hence cost taken is 0	
Means of Finance	
	(in Rs. Lakh)
Particulars	Amount
Own Contribution	125.20
Term Loan from Bank	187.80
Working Capital Own contribution	24.90
Working Capital	74.68
total	412.58

The detailed repayment schedule of the term loan is indicated in Annexure 5. The interest for the first year is capitalized and loan outstanding accordingly increased in the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may not be necessary as the project should be able to generate sufficient profits and the internal

accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

Year-wise Interest on Bank Loan					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Interest on Term Loan in Rs.*	0	2030298	1457034	883770	310516
Interest on Term Loan in Rs. Lakh	0.00	20.30	14.57	8.84	3.11
Interest on working Capital	0	8.21	8.21	8.21	8.21
Principal Repayment in Rs.	0	5211456	5211456	5211456	5211432
Principal Repayment in Rs. Lakh	0.00	52.11	52.11	52.11	52.11
Balance outstanding - end of the year	208.46	156.35	104.24	52.13	0.00
* Interest on term loan has been capitalisedfor 12 months leading to increase in the capital outlay. This has been done to account for the 12 month moratorium.					

Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented above in the series of tables. Accordingly the projected profit and loss account, balance sheet, and cash flow statement along with breakeven analysis is presented in the tables below. During the moratorium period the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over a period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

Projected P&L Statement					
					(in Rs. Lakh)
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation%	0%	65%	70%	75%	80%
Gross Sale of corn starch & by products	0	783.43	978.78	1100.69	1236.38
Total	**0**	**848.56**	**1055.95**	**1189.58**	**1338.32**
Cost of Production					
Raw Material Consumed	0	273	316.05	364.02	417.42
Electricity Charges	0	14.04	15.12	16.2	17.28
Depreciation	0	42.59	36.59	31.45	27.05
Salary and wages	0	59.4	65.34	71.87	79.06
Repair and Maintenance	0	46.38	46.38	46.38	46.38
Packaging	0	28.08	32.54	37.45	42.92
Selling & Admn Expenses	0	48.80	48.80	48.80	48.80
Total Cost of Production	**0**	**512.29**	**560.82**	**616.17**	**678.91**
Profit before interest and taxes	**0**	**336.27**	**495.13**	**573.41**	**659.41**

Interest on Term Loan*	0.00	20.30	14.57	8.84	3.11
Interest on Working Capital	0	8.21	8.21	8.21	8.21
Total Interest Payment	**0.00**	**28.51**	**22.78**	**17.05**	**11.32**
Profit before Tax	0.00	307.76	472.35	556.36	648.09
Income Tax	0	76.94	118.09	139.09	162.02
Net profit after tax	**0.00**	**230.82**	**354.26**	**417.27**	**486.07**
Term loan interest for first year capitalised to account for the moratorium					

As can be seen, the unit would be in profits after tax from second year onwards. The project has enough margin at 65% capacity utilization.

Projected Balance Sheet					
					Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Liabilities					
Capital					
Opening Balance	0	125.20	380.92	735.18	1152.45
Own Capital Contribution	125.2	24.90			
Retained Earnings	0.00	230.82	354.26	417.27	486.07
Total-Closing Balance	**125.2**	**380.92**	**735.18**	**1152.45**	**1638.52**
Term Loan	208.46	156.35	104.24	52.13	0.00
Working Capital Limit	0.00	74.68	74.68	74.68	74.68
Sundry Creditors	0	35.15	40.03	45.29	51.14
Total Liabilities	**333.66**	**647.1**	**954.13**	**1324.55**	**1764.34**
Assets					
Fixed Assets	313	313	313	313	313
Gross Depreciation	0	42.59	79.18	110.63	137.68
Net Fixed Assets	**313**	**270.41**	**233.82**	**202.37**	**175.32**
Sundry Debtors	0	17.57	20.02	22.64	25.57
Stock in Hand	0	117.16	133.44	150.96	170.45
Interest capitalised	20.66	0	0	0	0
Cash and Bank Balance	0	241.96	566.85	948.58	1393
Total Assets	**333.66**	**647.1**	**954.13**	**1324.55**	**1764.34**

The project is generating healthy profit from second year with the first year being moratorium as presented above. The breakeven analysis indicates the level of operation at which the operations will breakeven and not have any loss. It becomes important to identify the fixed and the variable costs. Even within variable component there is always a part which is fixed. For example, even if the plant is not running there will be lights and fans which will be used for administrative work, people will have to be paid salary for those days

as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost÷Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 19% capacity utilisation.

Breakeven Point Analysis		
		Rs. In Lakh
Total Sale (Sales - opening WIP + closing WIP)	**Year 1**	**Year 2**
Net Sales	0.00	848.56
Less: Opening Stock	0.00	0.00
Add: Closing Stock	0.00	88.69
Total Production/Sales	**0.00**	**937.25**
Variable Expenses		
Raw Material and Packaging	0.00	301.08
Interest on working Capital	0.00	8.21
Repair and Maintenance	0.00	11.60
Salary expenses	0.00	5.94
Sales & Admin Expenses	0.00	7.32
Energy - Electricity	0.00	13.76
Total	**0.00**	**347.91**
Contribution	**0.00**	**589.34**
Contribution per unit (per tonne)	**NA**	**116599.00**
Fixed expenses		
Interest on Term Loan	0.00	20.30
Repair and Maintenance	0.00	34.78
Salary expenses	0.00	53.46
Sales & Admin Expenses	0.00	41.48
Energy - Electricity	0.00	0.28
Depreciation	0.00	42.59
Total	**0.00**	**192.89**
Capacity utilisation	0%	65%
Operating Profit	**0.00**	**396.45**
Breakeven point in physical units (tonnes)	**NA**	**165**
Breakeven point in capacity utilisation (%)	**NA**	**19%**

Cash Flow Statement					
					Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Sources of Fund					
Own margin	125.20	24.90			
Profit Before Interest and Tax	0.00	336.27	495.13	573.41	659.41
Depreciation	0.00	42.59	36.59	31.45	27.05
Working Capital accretion	0.00	74.68	0.00	0.00	0.00
Term Loan accretion	187.80	20.66	0.00	0.00	0.00
Creditors	0.00	35.15	4.88	5.26	5.85
Total	**313.00**	**534.25**	**536.60**	**610.12**	**692.31**
Uses of Fund					
Fixed Assets	313.00	0.00	0.00	0.00	0.00
Stock in Trade - Accretion	0.00	117.16	16.28	17.52	19.49
Debtors - Accretion	0.00	17.57	2.45	2.62	2.93
Repayment of term Loan	0.00	52.11	52.11	52.11	52.11
Interest on Term Loan	0.00	20.30	14.57	8.84	3.11
Interest on working capital	0.00	8.21	8.21	8.21	8.21
Income Tax	0.00	76.94	118.09	139.09	162.02
Accretion in cash & bank balance	0.00	241.96	324.89	381.73	444.44
Total	**313.00**	**534.25**	**536.60**	**610.12**	**692.31**

The cash flow statement above indicates that chance of any problem with the cash is very little or so to say practically nil in the project. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the same, sudden problem with supply of raw material or shipment not arriving, etc. Now these are unforeseen risk which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to have that.

Calculation of DSCR					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Cash Accruals					
Depreciation	0	42.59	36.59	31.45	27.05
Profit before interest and taxes	0	336.27	495.13	573.41	659.41
Total	**0**	**378.86**	**531.72**	**604.86**	**686.46**
Repayments					
Interest on Term Loan	0.00	20.30	14.57	8.84	3.11
Term Loan Instalments	0.00	52.11	52.11	52.11	52.11
Total	**0.00**	**72.41**	**66.68**	**60.95**	**55.22**
Debt Service Coverage Ratio	**NA**	**5.23**	**7.97**	**9.92**	**12.43**

The debt service coverage ratio from second year is 5.23 and above indicating that the project should not have any problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is a healthy 1.77 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 1897.01 lakh. And the internal rate of return comes to 146% which essentially indicates that at 146% discount rate the net present value of net benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

BC Ratio, NPV and IRR								**(Amt in Rs. Lakh)**
Costs and revenue items	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**	**6th year**	**7th year**	**8th year**
Fixed Costs	312.999							
Variable costs								
Raw material	0	301.08	348.59	401.48	460.34	494.9	532.01	571.92
Salary	0	59.4	65.34	71.87	79.06	86.97	95.66	105.23
Electricity	0	14.04	15.12	16.2	17.28	17.28	17.28	17.28
Maintenance	0	46.38	46.38	46.38	46.38	46.38	46.38	46.38
Sales and Admin exp	0	48.8	48.8	48.8	48.8	48.8	48.8	48.8
Total Costs	**312.999**	**469.7**	**524.23**	**584.73**	**651.86**	**694.33**	**740.13**	**789.61**
Rate of discount	15%							
Present value of costs	2466.98							
Revenues								
Sale of finished goods								
sale of Corn Starch		783.43	978.78	1100.69	1236.38	1306.37	1368.58	1437.70
Sale of Bran/fibre		14.74	18.83	21.70	24.89	26.92	28.94	31.11
sale of germ		19.50	22.58	26.00	29.82	32.05	34.46	37.04
Sale of Gluten		30.89	35.76	41.19	47.23	50.77	54.58	58.67
Total	**0**	**848.56**	**1055.95**	**1189.58**	**1338.32**	**1416.11**	**1486.56**	**1564.52**
Rate of discount	15%							
Present value of benefits	4363.99							
BC Ratio	1.77							
Net Benefits	-312.999	378.86	531.72	604.85	686.46	721.78	746.43	774.91
Rate of discount	15%							
NPV	1897.01							
IRR	146%							

Registration/Certification

There are four registrations necessary for MSMEs which are involved in food proceesing. A brief on the same is givenbelow:

1. **GST**: GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central government is being linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by GoI.

   (https://reg.gst.gov.in/registration/)

2. **FSSAI:**The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards operating procedures, food safety norms, packaging & labeling norms. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India. The registration can be done at FSSAI website. (https://fssai.gov.in/cms/registration.php)

3. **UDYAM:** The entrepreneur may consider getting himself registered in UDYAM

   (https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm).

4. **ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging along with FSSAI registration. Various agencies are there doing this job of certification. One such site available is https://legalwaycertification.com/iso/. There are many other such agencies who have been authorized to issue ISO certification.

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required. For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year. In addition to the ones stated above, it would be necessary to take fire and pollution control clearance, MSME registration, Rice Mill Udyog license, PF and ESIC registration and IEC registration for exports. It would also be advisable choose a brand name for the product and secure the name with trademark. Having a trademark is useful is necessary for direct marketing as well as exports.

Model Project Report on

Paddy Processing

Processing of Paddy

Introduction

Agriculture is the main occupation of the rural population in West Bengal. Among various crops, rice is the principal food crop of the State. West Bengal is the largest producer of rice in the country with an annual output of around 150-160 Lakh Tonnes. The rice is obtained after hulling/ dehusking of paddy in a rice mill. The paddy comprises of 20% rice hull or husk, 11% bran layers, and 69% starchy endosperm. Paddy in its raw form cannot be consumed by human beings. It needs to be suitably processed for obtaining rice. Rice milling is the process which helps in removal of hulls and bran from paddy grains to produce polished rice. Rice milling is the process of removal of husk and bran layer from the paddy to produce whole white rice kernel. The rice should be free from impurities and should contain minimum number of broken grains. Food Corporation of India (FCI) is the main purchaser of rice. About 20 to 25% of total production of rice is procured by FCI for at Minimum Support Price for Public Distribution System. In West Bengal for the year 2021-22 procurement plan 55 lakh tonnes (kharif and Rabi) is expected to be procured by the various agencies of the state and FCI as per the details given below:

Sl. No.	State		FCI	Total (State and FCI) (LMT)
	Name of the CMR agency/CPC	Target for paddy to be procured (in LMT)	Target of paddy to be procured (in LMT)	
1	WBECES Ltd. (by societies/FPO)	10.00		
2	WBECES Ltd. (by Self Help Groups)	2.00		
3	BENFED	5.00		
4	CONFED	0.75		
5	PBAMCL	0.25		**55.00**
6	NAFED	0.75		
7.	NCCF	0.25		
8	CPC	30.00	6.00	
	TOTAL	**49.00**	**6.00**	
Source: GoWB order No.3576-FNS/24012/4/2021 dataed 09 October 2021				

Essentially it means that 1/3rd of the production in the state would go for procurement by Government agencies to support the food distribution system. The balance would be utilized by private players.

India has about more than 82000 registered single huller units, 2600 double hulling unit, 5000 units of disc sheller cum polisher and 10000 units of rubber roll sheller. The average capacity of these units ranges between 2 tonnes per hour to 10 tonnes per hour. In West Bengal, we have around 1100 rice mills. In India, rice milling

business has a turnover of more than Rs.25,500 crore per annum. Among other states, Punjab, Haryana, Andhra Pradesh etc. also produce large quantities of rice. Rice is a staple food for East and South India. Moreover, it has a huge export market. It is one of the main source of carbohydrate for the majority of the population.

Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The Proforma for promoter detail is given in Annexure – 1.

History of the company

The project has been prepared as if a new set up is being made for the purpose of paddy processing. The same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained/presented in the project report. Proforma for company report is given in Annexure-2.

Finished product and its utility

Rice is a staple food for the majority of population in India. Rice bran is a byproduct of the rice milling process and it contains various antioxidants that impart beneficial effects on human health. This can be utilized for the production of oil and also used as animal feed. The rice bran oil is a niche product and is being promoted as healthy oil. The husk is having high calorie value and used as a source of energy. The husk is a delicacy for horses and is in good demand for animal feed.

Market, Demand and Major Competitors

The processing in a rice mill is done for the farmer or for the people who procure paddy from the farmers. Essentially, Rice Mill is a service provided to either of the two at a price. There are of course rice mills that go to the extent of procuring paddy and processing it before selling it in the market. In this case we are making the assumption that the unit will be milling rice based on the demand from farmers and procurers. The market is west Bengal for this activity is quite buoyant simply because the production of paddy is highest among all states in the country. Moreover, every farmer prefers to have a milling facility close by. West Bengal has around 1100 odd rice mills across the state. However, some are for specific jobs like making puffed rice, etc. As such there is scope for more such units in the state. However, the exact location for setting up the unit has to be decided on the basis a detailed analysis of the locality where the entrepreneur wants to set up the unit keeping in view number of such units in the area, paddy production, trend of switching over to cash crops, etc. One of the things which plays an important role in the marketing is neutralized in case of milling of rice and that is price. As mentioned earlier 1/3rd of the rice produced in the state is procured by the Government agencies and given to millers for milling at a fixed rate. Thus the strategy for utilizing the capacity would be dependent on how much the unit is going to get from the government and how much it would go in for direct milling based on raw material received from farmers. The rice miller has a choice of not registering in the government scheme. However, that may not be the right approach. This is so because in a problem year this could be a savior for the unit. The rates for milling have been fixed by GoI. As per the order issued by Govt of West Bangal,

the acquisition cost based on MSP for the year 2020-21 for per quintal of paddy from the farmers was taken at Rs.1868/- per quintal and Rs.3152.84/- per quintal of Rice. In essence Rs1284.84 per quintal of rice goes to the Rice mill owner. The out turn ratio is taken at 67%. MSP for the year 202122 has been increased to 1941. Accordingly the price of milled rice would also go to approximately Rs.3262.74 or more. The money received per quintal of Rice by the mill would be around Rs.218.45 per quintal of Rice produced which are also meant for various expenses like transportation, packing charges, etc. Detailed cost sheet is prepared by State Govt. allocating money for each of the purposes for which money is to be used. For milling, specifically the mill owner gets Rs.30 per quintal (Rs.20/- as per central Govt Rate+10/- given by state Govt.). Analysis of the same is given in Annexure-3. The issue is that the payment made by the State Government takes about 10 months time and hence there is a higher working capital requirement for millers. However, the same is expected to improve with computerization of the whole payment system. It may be stated that based on the details which could be gathered, there is practically no margin for the millers for doing the job for government. However, they still are willing to do the same. There are various reasons for that. First of all for that part of the capacity to be used for government job, no marketing requirement would be necessary. Secondly, even though they do not have any margin from rice and in fact it could lead to some loss, they earn enough by selling the rice bran. Approximately, 5-6 tonnes of bran is produced from every 100 tonnes of rice processed. The market price for the same being around Rs.30000/- per tonne, this gives an income of Rs.1.5 – 1.8 lakh per 100 tonnes of rice milled. Strategically locating the milling plant close to the collection centre would reduce cost of transportation and hence boost profit. It is also apparent from the system that the mills should necessarily have proper and large enough storage space which could become a source of income before and even after milling. However, as the payments from Government takes time, dependency on this mode of processing completely will not be advisable as it would increase the working capital requirement heavily. Moreover, Government is procuring only 1/3rd of the paddy produced. Rest is being sold in the market and at a price which is lower than the MSP at a discount of 15-16%. Thus having a brand and selling it directly in the market has its advantages.

Raw Material Requirement

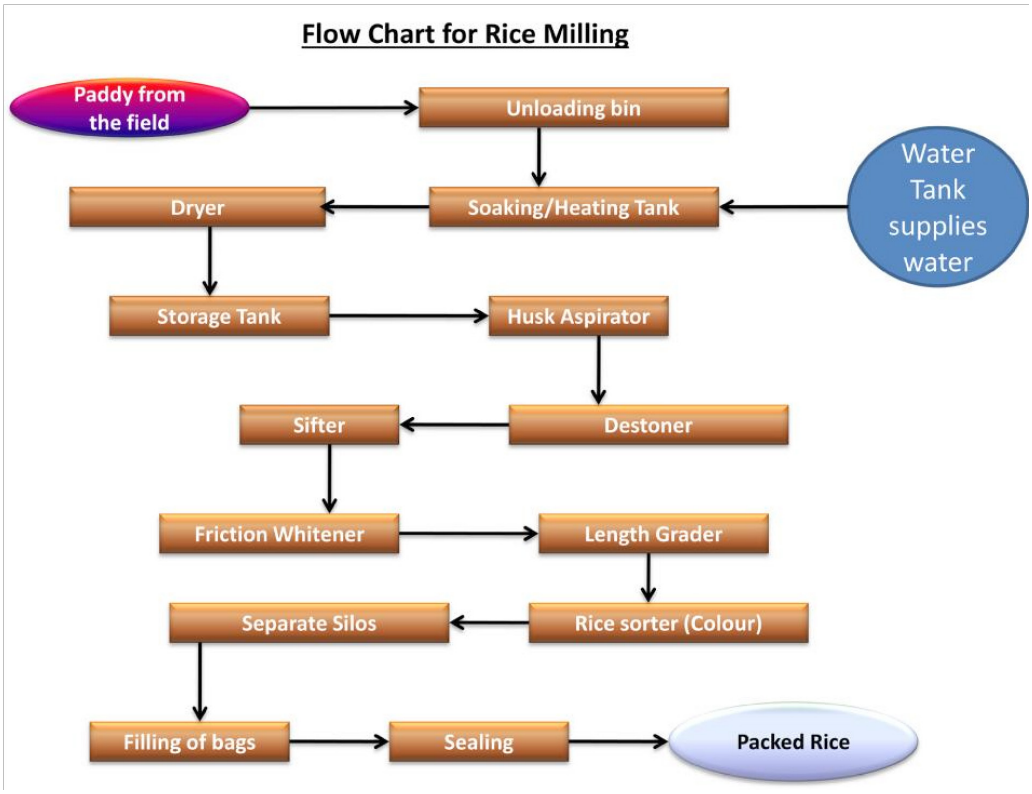
West Bengal produces 150-160 lakh tonnes of paddy each year across the three seasons — aus, aman and boro. By official estimates, West Bengal has 5.8 million hectares under rice cultivation. This covers both irrigated and the rainfed areas, with an average productivity of 2.6 tonnes/ha. during the year. As a result of new agriculture strategy, like 'High Yield Varieties Programme' the production of paddy has seen appreciable growth in production over the years. Many of the rice mills operate at 3 shifts per day during harvesting and procurement season. Even otherwise they work for three shifts depending on requirement. Working for two shifts in a day is a general trend.

Manufacturing Process

There are various processes which were being used for rice milling. However, things have been standardized over the years and the process followed in general is given below:

- Paddy brought from the Mandi or farmers is put into the unloading bin. Part cleaning is done at this stage. Any big foreign material is removed from the paddy.

- Using escalators, the paddy is moved to the soaking/heating tank. In case of par boiled rice the rice is boiled here as well using steam and for this the water tank and boiler comes to use.
- After this using conveyor belt, the paddy is sent to the dryer.
- Using centrifugal pump the paddy is dried till the humidity in the air comes to 11% or less.
- From the dryer the paddy is sent to the storage tank.
- It is then allowed to pass through the husk aspirator which segregates the husk and rice
- The rice is then passed through a destoner to separate small stones from the rice
- It is then stored in the silo/industry rice tank
- The rice is then passed through the sifter to remove any dirt left
- From the sifter it is moved to friction whitener. Here using the concept of rubbing, so that the rice gets polished
- Length of the grains decides the quality of rice. The length grader allows us to sort the rice based on the length of the grain.
- After the segregation based on the length, the rice is made to go through the Rice colour sorter. The black or dark brown grains removed from the lot in this process.
- It is then sent to the storage silos from where they are put in bags, and stitched for dispatching the material to the market.



SWOT Analysis

Strengths	Weakness
➢ The technology for the product is stable though some developments are coming up. ➢ Demand for Rice is there across the country and will not be a concern	➢ It is what in ,arketing terminology called a "Me too" product. Differentiating your product from that of others needs lot of marketing effort. ➢ Scope for diversification within the product is mimimal
➢ Shelf life of the product is long and hence the price realization will be stable and market fluctuations are minimal	
Opportunities	**Threats**
➢ Tie up with established brands like Big Basket who sell sell rice under there own brand name (BB Popular and BB Royal) could reduce the marketing effort and lead to better price realisation	➢ As income level goes up people are moving over to other more fibrous products in carbohydrates as a part of their diet. However, with the demand for rice from within the country and abroad, it should not be a major threat in immediate future

Financial Aspects of the Project

Infrastructure requirement

Any project preparation is based on a set of assumptions made which are close to the market reality. List of such assumptions is given in Annexure 4. In this project the land used is assumed to be own land. For a 5 TPH Rice mill the requirement of land will be around 3 acres. The major component of a rice milling unit is land, building, plant and machinery and civil works. It is comparatively labour intensive and would need around 80-90 people to manage the unit.

Land and its development

A plot of approximately 3 acres would be necessary for setting up a Rice Milling factory of this scale. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as non-agriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land.

Size of the unit

The capacity has been restricted to 5 tonnes per hour which would mean (taking two shifts per day) 24000 tonnes of paddy per annum. This would entail an investment of around 8 crores excluding land and working capital requirement.

Machineries and Equipment

Various machineries and equipments will be required for setting up the plant. The list of such equipment and number of such units required for setting up a Rice Mill along with Miscellaneous fixed assets and transportation requirements for which investment has to be made is given below.

Processing Equipment cost				
Sl no.	**Machine**	**Unit**	**Unit Cost**	**Amount in Rs.**
1	Weighing machine (truck weighing-Dharam Kanta)	1	750000	750000
2	Precleaning facility (jharai)	1	2500000	2500000
3	Elevator and motors	28	200000	5600000
4	Pump	2	500000	1000000
5	Husk Aspirator	1	400000	400000
6	Destoner	3	125000	375000
7	Friction whitener	1	550000	550000
8	High grade polisher	1	550000	550000
9	Sifter	2	250000	500000
10	Length Grader	1	100000	100000
11	Rice sorter	2	4000000	8000000
12	Sack stitching machine	2	6000	12000
13	Unloading bin	1	200000	200000
14	Water tank	1	550000	550000
15	Boiler	1	1500000	1500000
16	Storage tank	1	1000000	1000000
17	Dryer including centrifugal blower	1	7500000	7500000
18	Water recycling facility (Effluent Treatment) and testing lab	1	1500000	1500000
	Total cost of equipment			32587000
	Addl charges for GST, transportation, etc		30%	9776100
	Total cost of equipment incl GST, etc.			42363100

1. Prices quoted on Indiamart or companies are generally excluding GST, Transportation charges, installation charges, travel cost and training as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
2. Based on the searches on Indiamart, as well as discussion with Rice mill owner, it is observed that there are companies supplying all the equipments giving a single window solution. It is suggested that it would be better for an entrepreneur to buy all equipments from a single vendor because the following reasons.
    a. There will not be any mismatch between equipments and automation would be smoother.

b. Single point of contact would not allow any blame game between vendors in case something goes wrong.

c. Power assessment would be better and line can be drawn accordingly

d. A single unit set up by any of these can be visited to get a clear overview.

e. Training would be much easier as it would from one agency

Rice mill of this capacity cannot be supported by Diesel Generator given the power requirement it has. 800 KVA generator sets are available but that would increase the project cost by another Rs. 1 crore approximately. Moeoever, the project may not remain viable unless the basic parameters are changed. Thus there has to be regular power supply to support such a unit.

Miscellaneous fixed assets				
Sl. No.	**Particulars**	**Units**	**Unit cost in Rs.**	**Amount in Rs.**
1	Electrical and water Connection	1	1000000	1000000
2	Chairs	11	2000	22000
3	Table	2	5000	10000
4	Computer	2	50000	100000
5	Printer	1	15000	15000
	Total			**1147000**

Given the fact that the raw material would have to be stored there would be a necessity to have storage space in the form of storage godown. The total building cost is given in table below:

Land and Building			
Particulars	**Area reqd (sqft)**	**Rate/sqft in Rs.**	**Amount in Rs.**
Land cost	Own land - 3 acres		0
Building cost @ 1430/-- per sq ft	10000	1430	14300000
Prefabricated godown for 25000 sq ft.	25000	234	5850000
Total cost			**20150000**

In case of a rice mill, it would be essential to have your own transportation facility to transport tonnes of rice to and fro. It would otherwise be a problem in the peak season as trucks would not be available at the crucial time hampering the procurement of paddy and dispatch of processed rice or rice bran.

Accordingly it is felt that the Mill should have 9 transport vehicles of various capacity as given below.

Vehicles for Transportation of goods	Units	Price in Rs.	Amount
eight to ten tonne capacity truck	4	2500000	10000000
4-5 tonne truck	3	1500000	4500000
Small transport vehicle (1 tonne)	2	800000	1600000
Total			**16100000**

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

Project Summary			
Project Cost excluding land in Rs.			**79760100**
Preoperative Expenses in Rs.			**797601**
Total Project Cost excluding land in Rs.			**80557701**
Own Contribution in Rs.			**32223080**
Estimated Bank loan in Rs.			**48334621**
Own Contribution in Lakh			**322.23**
Bank Loan in Lakh			**483.35**

In addition interest cost of the first year will be capitalized as the project would need a moratorium for 12 months. This would increase the outstanding at the end of the first year.

Project Timeline

The project to start off production would need around one year for implementation to be completed. The breakup for the same is given in table below:

Activity	Projected time period
Arrangement of finance	3 months
Building of premises/Acquisition of premises	6 months
Procurement of equipments	2 months
Recruitment of manpower	1 month
Training	1 month

As recruitment of manpower can be done along with procurement of equipment and the activity would not be part of the critical path, the total time taken would be 12 months for setting up the project and to reach a position to start production. Hence, one year moratorium has been taken.

Price of Raw material and finished goods

It is Imperative that there should be a basis for having a price for the raw material and finished goods. This is more important because the procurement of rice in case of rice mill in West Bengal is through two channels viz., government agencies and direct procurement from farmers. This forces us to make certain reasonable assumptions for preparing a model project. The state Government procures nearly 1/3rd of the paddy produced in the state. Hence it would be fair to assume that 30% of the rice would be obtained from Government agencies whereas the rest 70% directly from the farmers/FPOs/societies.

Weighted average Price of Paddy and Rice			
Raw material source	**capacity utilised in %**	**Price of Rice/ qtl In Rs.**	**Price of Paddy/ qtl in Rs.**
Govt Scheme - milling and giveng back to govt	30%	1258.84	0
Private Procurement, milling & selling	70%	3263.74	1940
Weighted Avreage Price of Paddy and rice		**2662.27**	**1358**

As the government agencies are procuring the paddy and paying the farmers directly, the price of raw material for the Rice miller comes to "0". For the private procurement, the price has been taken as equivalent to the MSP to be on the conservative side. It may be stated that based on discussions with Rice

mill owner, it came to light that the price outside government procurement system is about Rs.300 lower than the MSP. This would only make the project more viable.

Working Capital requirement

Working capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated above from which working capital requirement is generated. In the following tables details of working capital requirement is assessed.

Capacity utilisation in the second year has been kept at a level of 65% as the market linkages has to be set up and brand has to establish itself in the surrounding locality. Cost of raw material and sales revenue from sale of Rice and its byproducts in the first five years of the project is expected to be as follows:

Paddy and Packaging material requirement for 5 years					
Items ↓ / Period →	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation	0%	65%	70%	75%	80%
Raw material requirement per day in tonnes	0	52	56	60	64
Raw material required per year in tonnes	0	15600	16800	18000	19200
Rate per tonne in Rs.	0	13580	14599	15694	16871
Cost of packaging material per 50 kg	0	56	60.2	64.72	69.57
Total Cost in Rs. Lakh	**0**	**2235.54**	**2588.15**	**2981.02**	**3418.22**
Calculation of Sales					
Items ↓ / Period →	1st year	2nd year	3rd year	4th year	5th year
Production of Rice					
Opening Stock	0	0	1045.2	1125.6	1206
Production in tonnes	0	10452	11256	12060	12864
Closing Stock	0.00	1045.20	1125.60	1206.00	1286.40
Net Sales in tonnes	0	9406.8	11175.6	11979.6	12783.6
Sales price per packet of 50 kg incl packaging	0	1387	1456	1529	1605
Sales value of Rice in Rs. Lakh	**0.00**	**2609.45**	**3254.33**	**3663.36**	**4103.54**
By-products					
Opening Stock of Rice Bran in tonnes	0	0	101	109	117
Bran production in tonnes	0	1014	1092	1170	1248
Bran Rate per tonne	0	32000	34400	36980	39754
Closing Stock in tonnes	0	101	109	117	125

Paddy and Packaging material requirement for 5 years					
Net sale in tonnes		913	1084	1162	1240
Total sale of rice bran in Rs. Lakh	**0**	**292.03**	**372.96**	**429.78**	**493.03**
Husk Production in tonnes	0	3120	3360	3600	3840
Husk Rate per tonne	0	3600.00	3870	4160	4472
Total sale of husk in Rs. Lakh	**0**	**112.32**	**130.03**	**149.76**	**171.72**
Total value of byproduct sales in Rs.	**0**	**404.35**	**502.99**	**579.54**	**664.75**
Total revenue from Sales in Rs.	**0**	**3013.80**	**3757.32**	**4242.90**	**4768.29**

Working capital requirement has to be evaluated based on the above mentioned details. The same is given in the table below:

Working Capital Assessment					
Computation of value of closing stock and working capital requirement					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Finished goods inventory in tonnes	0	1045.2	1125.6	1206	1286.4
Price of finished good/50 kg in Rs. including packaging material	0	1387	1456	1529	1605
Total finished goods stock price in Rs.	0	28993848	32777472	36879480	41293440
Raw material inventory in tonne	0	9360	10080	10800	11520
Price of Raw Material/tonne in Rs.	0	13580	14599	15694	16871
Packaging Material per 50 kg	0	56	60.2	64.72	69.57
Total Raw Material Stock Price	0	134132544	155289254	178861478	205093302
Total value of stock in Rs.	0	163126392	188066726	215740958	246386742
Amount in Lakh	0	1631.26	1880.67	2157.41	2463.87
Less Creditors in lakh	0	489.38	564.2	647.22	739.16
Paid Stock in lakh	0	1141.88	1316.47	1510.19	1724.71
Add sundry debtors in lakh	0	244.69	282.1	323.61	369.58
Total	**0**	**1386.57**	**1598.57**	**1833.8**	**2094.29**
Own contribution @ 25%	**0**	**346.64**	**399.64**	**458.45**	**523.57**
Working Capital requirement*	**0**	**1039.93**	**1198.93**	**1375.35**	**1570.72**
*** WC requirement has been taken based on the requirement of the second year as the first year would be treated as moratorium period for setting up the project.**					

The project is expected to generate sufficient cash and working capital limit is pegged at the requirement of the second year, first year being the moratorium for setting up the factory.

Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, rental charges for the premises and electricity charges. The details of these expenses are given below:

Labour and Staff Salary/wages				
Particulars	**Wages/ Salary per month**	**No. of employees**	**Total Salary per month**	**Annual Salary**
Manager	30000	1	30000	360000
Accountant	25000	1	25000	300000
Helper	10000	1	10000	120000
Plant Operator	20000	10	200000	2400000
Skilled labour	15000	7	105000	1260000
Unskilled labour	10000	70	700000	8400000
Total Salary			**1070000**	**12840000**

Projected Salary Expenses						
Salary expenses Projection	1st year		2nd year	3rd year	4th year	5th year
Annual Salary expenses in Rs.		0	12840000	14124000	15536400	17090040
Salary expenses rounded off to lakhs		**0**	**128.4**	**141.24**	**155.36**	**170.9**

Electricity Charges					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation	**0%**	**65%**	**70%**	**75%**	**80%**
Consumption of power per day in units	0	6500	7000	7500	8000
Rate per unit in Rs.	9.00	9.00	9.00	9.00	9.00
Power bill per month in Rs.	0	1462500	1575000	1687500	1800000
Total power bill per year	**0**	**17550000**	**18900000**	**20250000**	**21600000**
Power bill in Rs. Lakh	**0**	**175.5**	**189**	**202.5**	**216**

Packaging Cost					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Cost of Packaging per unit (50 kg)	0	56	60.2	64.72	69.57
Total Production in kg	0	10452000	11256000	12060000	12864000
Packaging cost in Rs. Lakh	**0.00**	**117.06**	**135.52**	**156.10**	**178.99**

Selling, transportation and administrative expenses in Rs.					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Sales and branding expenses per annum	0	1000000	1000000	1000000	1000000
Admin Expenses	0	480000	480000	480000	480000
Transportation charges	0	2400000	2400000	2400000	2400000
Total Expenditure on Sales, Admin &Transportation	**0**	**3880000**	**3880000**	**3880000**	**3880000**

All these costs will be factored in later in the report while evaluating the financial benefits of the project.

Depreciation

The depreciation ca lculation is as follows:

Depreciation Calculation					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Total value of equipments & vehicles in Rs.	0	59610100	50668585	43068297	36608052
Depreciation @15% in Rs.	**0**	**8941515**	**7600288**	**6460245**	**5491208**
Value at the end of the year to be carried forward in Rs.	0	50668585	43068297	36608052	31116844
Total Value of building in Rs.	0	20150000	18135000	16321500	14689350
Depreciation of building@10% in Rs.	**0**	**2015000**	**1813500**	**1632150**	**1468935**
Value at the end of the year to be carried forward in Rs.	0	18135000	16321500	14689350	13220415
Total depreciation in Rs.	**0**	**10956515**	**9413788**	**8092395**	**6960143**
Total depn in Lakh	0	109.57	94.14	80.92	69.6

Repairs and maintenance

In case of new equipments including computers, generally they give a warranty for one year. Thus the maintenance cost would be starting from the second year onwards. The same in general is given at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

Cost of Maintenance	
Particulars	**Amount**
Total fixed cost (equipment & vehicle)	59610100
Maintenance cost in percentage	20%
Cost of Maintenance	11922020
Maintenance cost in Rs. Lakh	119.22

Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

Cost of The Project	
	(in Rs. Lakh)
Particulars	**Amount**
Land & Building*	201.5
Plant & Machinery	423.63
Misc. Items and transport vehicles	172.47
Working Capital	1386.57
Total	2184.17
*Land is assumed as own land and hence cost taken is 0	

Means of Finance	
	(in Rs. Lakh)
Particulars	**Amount**
Own Contribution	322.23
Term Loan from Bank	483.35
Working Capital Own contribution	346.64
Working Capital	1039.93
total	2192.15

The detailed repayment schedule of the term loan is indicated in Annexure 5. The interest for the first year is capitalized and loan outstanding accordingly increased in the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may not be necessary as the project should be able to generate sufficient profits and the internal accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

Year-wise Interest on Bank Loan					
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Interest on Term Loan in Rs.*	0	5225471	3750036	2274612	799188
Interest on Term Loan in Rs. Lakh	0.00	52.25	37.50	22.75	7.99
Interest on working Capital	0	114.39	114.39	114.39	114.39
Principal Repayment in Rs.	0	13412964	13412964	13412964	13412960
Principal Repayment in Rs. Lakh	0.00	134.13	134.13	134.13	134.13
Balance outstanding - end of the year	536.52	402.39	268.26	134.13	0.00
* Interest on term loan has been capitalisedfor 12 months leading to increase in the capital outlay. This has been done to account for the 12 month moratorium					

Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented above in the series of tables. Accordingly the projected profit and loss account, balance sheet, and cash flow statement along with breakeven analysis is presented in the tables below. During the moratorium period the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over a period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

Projected P&L Statement					
					(in Rs. Lakh)
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation%	0%	65%	70%	75%	80%
Gross Sale of Rice & by products	0	2609.45	3254.33	3663.36	4103.54

Projected P&L Statement					
Total	**0**	**3013.80**	**3757.32**	**4242.90**	**4768.29**
Cost of Production					
Raw Material Consumed	0	2118.48	2452.63	2824.92	3239.23
Electricity Charges	0	175.5	189	202.5	216
Depreciation	0	109.57	94.14	80.92	69.6
Salary and wages	0	128.4	141.24	155.36	170.9
Repair and Maintenance	0	119.22	119.22	119.22	119.22
Packaging	0	117.06	135.52	156.1	178.99
Selling & Admn Expenses	0	38.80	38.80	38.80	38.80
Total Cost of Production	**0**	**2807.03**	**3170.55**	**3577.82**	**4032.74**
Profit before interest and taxes	**0**	**206.77**	**586.77**	**665.08**	**735.55**
Interest on Term Loan*	0.00	52.25	37.50	22.75	7.99
Interest on Working Capital	0	114.39	114.39	114.39	114.39
Total Interest Payment	**0.00**	**166.64**	**151.89**	**137.14**	**122.38**
Profit before Tax	0.00	40.13	434.88	527.94	613.17
Income Tax	0	10.03	108.72	131.99	153.29
Net profit after tax	**0.00**	**30.10**	**326.16**	**395.95**	**459.88**
Term loan interest for first year capitalised to account for the moratorium					

As can be seen, the unit would be in profits after tax from second year onwards. The project has enough margin at 65% capacity utilization.

Projected Balance Sheet					
					Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Liabilities					
Capital					
Opening Balance	0	322.23	698.97	1025.13	1421.08
Own Capital Contribution	322.23	346.64			
Retained Earnings	0.00	30.10	326.16	395.95	459.88
Total-Closing Balance	**322.23**	**698.97**	**1025.13**	**1421.08**	**1880.96**
Term Loan	536.52	402.39	268.26	134.13	0.00
Working Capital Limit	0.00	1039.93	1039.93	1039.93	1039.93
Sundry Creditors	0	489.38	564.2	647.22	739.16
Total Liabilities	**858.75**	**2630.67**	**2897.52**	**3242.36**	**3660.05**
Assets					

Projected Balance Sheet					
Fixed Assets	805.58	805.58	805.58	805.58	805.58
Gross Depreciation	0	109.57	203.71	284.63	354.23
Net Fixed Assets	**805.58**	**696.01**	**601.87**	**520.95**	**451.35**
Sundry Debtors	0	244.69	282.1	323.61	369.58
Stock in Hand	0	1631.26	1880.67	2157.41	2463.87
Interest capitalised	53.17	0	0	0	0
Cash and Bank Balance	0	58.71	132.88	240.39	375.25
Total Assets	**858.75**	**2630.67**	**2897.52**	**3242.36**	**3660.05**

The project is generating healthy profit from second year with the first year being moratorium as presented above. The breakeven analysis indicates the level of operation at which the operations will breakeven and not have any loss. It becomes important to identify the fixed and the variable costs. Even within variable component there is always a part which is fixed. For example, even if the plant is not running there will be lights and fans which will be used for administrative work, people will have to be paid salary for those days as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost÷Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 31% capacity utilisation.

Breakeven Point Analysis		
		Rs. In Lakh
Total Sale (Sales - opening WIP + closing WIP)	**Year 1**	**Year 2**
Net Sales	0.00	3013.80
Less: Opening Stock	0.00	0.00
Add: Closing Stock	0.00	322.39
Total Production/Sales	**0.00**	**3336.19**
Variable Expenses		
Raw Material and Packaging	0.00	2235.54
Interest on working Capital	0.00	114.39
Repair and Maintenance	0.00	29.81
Salary expenses	0.00	12.84
Sales & Admin Expenses	0.00	5.82
Energy - Electricity	0.00	171.99
Total	**0.00**	**2570.39**
Contribution	**0.00**	**765.80**
Contribution per unit (per tonne)	**NA**	**8140.90**

Fixed expenses		
Interest on Term Loan	0.00	52.25
Repair and Maintenance	0.00	89.41
Salary expenses	0.00	115.56
Sales & Admin Expenses	0.00	32.98
Energy - Electricity	0.00	3.51
Depreciation	0.00	109.57
Total	**0.00**	**403.28**
Capacity utilisation	0%	65%
Operating Profit	**0.00**	**362.52**
Breakeven point in physical units (tonnes)	**NA**	**4954**
Breakeven point in capacity utilisation (%)	**NA**	**31%**

Cash Flow Statement				
				Rs. In Lakh
Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**
Sources of Fund				
Own margin	322.23	346.64		
Profit Before Interest and Tax	0.00	206.77	586.77	665.08
Depreciation	0.00	109.57	94.14	80.92
Working Capital accretion	0.00	1039.93	0.00	0.00
Term Loan accretion	483.35	53.17	0.00	0.00
Creditors	0.00	489.38	74.82	83.02
Total	**805.58**	**2245.46**	**755.73**	**829.02**
Uses of Fund				
Fixed Assets	805.58	0.00	0.00	0.00
Stock in Trade - Accretion	0.00	1631.26	249.41	276.74
Debtors - Accretion	0.00	244.69	37.41	41.51
Repayment of term Loan	0.00	134.13	134.13	134.13
Interest on Term Loan	0.00	52.25	37.50	22.75
Interest on working capital	0.00	114.39	114.39	114.39
Income Tax	0.00	10.03	108.72	131.99
Accretion in cash & bank balance	0.00	58.71	74.17	107.51
Total	**805.58**	**2245.46**	**755.73**	**829.02**

The cash flow statement above indicates that chance of any problem with the cash is very little or so to say practically nil in the project. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the same, sudden problem with supply of raw material or shipment not arriving, etc. Now these are unforeseen risk which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to have that.

Calculation of DSCR					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Cash Accruals					
Depreciation	0	109.57	94.14	80.92	69.6
Profit before interest and taxes	0	206.77	586.77	665.08	735.55
Total	**0**	**316.34**	**680.91**	**746**	**805.15**
Repayments					
Interest on Term Loan	0.00	52.25	37.50	22.75	7.99
Term Loan Instalments	0.00	134.13	134.13	134.13	134.13
Total	**0.00**	**186.38**	**171.63**	**156.88**	**142.12**
Debt Service Coverage Ratio	**NA**	**1.7**	**3.97**	**4.76**	**5.67**

The debt service coverage ratio from second year is 1.73 and above indicating that the project should not have any problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is a healthy 1.12 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 1712.38 lakh. And the internal rate of return comes to 69% which essentially indicates that at 68% discount rate the net present value of net benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

BC Ratio, NPV and IRR								(Amt in Rs. Lakh)
Costs and revenue items	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**	**6th year**	**7th year**	**8th year**
Fixed Costs	805.577							
Variable costs								
Raw material	0	2235.54	2588.15	2981.02	3418.22	3674.53	3950.09	4246.3
Salary	0	128.4	141.24	155.36	170.9	187.99	206.79	227.47
Electricity	0	175.5	189	202.5	216	216	216	216
Maintenance	0	119.22	119.22	119.22	119.22	119.22	119.22	119.22
Sales and Admin exp	0	38.8	38.8	38.8	38.8	38.8	38.8	38.8

BC Ratio, NPV and IRR								(Amt in Rs. Lakh)
Total Costs	**805.577**	**2697.46**	**3076.41**	**3496.9**	**3963.14**	**4236.54**	**4530.9**	**4847.79**
Rate of discount	15%							
Present value of costs	13852.36							
Revenues								
Sale of finished goods								
sale of rice		2609.45	3254.33	3663.36	4103.54	4335.17	4551.28	4777.69
Sale of Bran		292.03	372.96	429.78	493.03	533.35	573.34	616.35
sale of husk		112.32	130.03	149.76	171.72	184.59	198.45	213.35
Total	**0**	**3013.80**	**3757.32**	**4242.90**	**4768.29**	**5053.11**	**5323.07**	**5607.39**
Rate of discount	15%							
Present value of benefits	15564.74							
BC Ratio	1.12							
Net Benefits	-805.577	316.34	680.91	746	805.15	816.57	792.17	759.6
Rate of discount	15%							
NPV	1712.38							
IRR	68%							

Registration/Certification

There are four registrations necessary for MSMEs which are involved in food proceesing. A brief on the same is given below:

1. **GST**: GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central government is being linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by GoI.

   (https://reg.gst.gov.in/registration/)

2. **FSSAI:**The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards operating procedures, food safety norms, packaging & labeling norms. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India. The registration can be done at FSSAI website. (https://fssai.gov.in/cms/registration.php)

3. **UDYAM:** The entrepreneur may consider getting himself registered in UDYAM.

   (https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm).

4. **ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging along with FSSAI registration. Various agencies are there doing this job of certification. One such site available is https://legalwaycertification.com/iso/. There are many other such agencies who have been authorized to issue ISO certification.

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required. For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year.

In addition to the ones stated above, it would be necessary to take fire and pollution control clearance, MSME registration, Rice Mill Udyog license, PF and ESIC registration and IEC registration for exports. It would also be advisable choose a brand name for the product and secure the name with trademark.

Having a trademark is useful is necessary for direct marketing as well as exports.

Annexure

Annexure 1: Promoter's Profile

Sl. No.	Particulars	Details				
1	Name of the person					
2	Date of birth and Age					
3	Marital status					
4	Residential Address					
5	Educational Qualification	Item	Name of School/ college	Year of Passing	Subject	Percentage obtained
		Secondary				
		Higher secondary				
		College				
		Post- Graduation				
		Any Other (Pl. Specify)				
6	Training	Specify training programmes attended, if any				
7	Past experience	Work Experience: Business Experience:				
8	Aadhaar Number					
9	PAN Number					
10	Any police complaint against the promoter	Yes/No; If yes please give details				

Annexure 2: Company Profile

Is it an existing company? : Yes/No (If "Yes" the fill up table 1 and if "No", go to table 2)

Table 1 of Annexure 3 (for existing companies)

Sl. No.	Item	Details			
1.	Name of the company				
2.	Year of establishment				
3.	List of investors/ shareholders	Name	Pan No.	CIBIL Score (enclose CIBIL Report)	Whether filing IT return (Yes/No)
4.	Products of the company				
5.	P&L Account and Balance sheet	Please attach copy of balance sheet and P&L account for maximum of last 3 years. If company is less than 3 years old, then the same may be provided for the years of existence			
6	Profit after tax	Financial Year			
		Profit/Loss			
		Turnover			
7.	Proposed location of the new unit				
8	Connectivity and other details	1. Whether the site is connected by motorable approach road? Yes/No 2. Whether the Road is a metallic road? Yes/No 3. Whether the area is a low lying area? Yes/No 4. Any incidence of flooding in the last 5 years in the area? Yes/ No – If yes please mention the years 5. Whether power connection available? Yes/No 6. Whether drinking water supply available? Yes/No 7. Whether water supply available for industrial activity? Yes/No 8. Name of the nearest town/city 9. Distance from the nearest town/city 10. Nearest Police station - pl give name and distance 11. Any other information – please specify			

Table 2 of Annexure 3 (for newly set up/proposed to be set up companies for the project)

<table>
<tr><th>Sl. No.</th><th>Item</th><th colspan="4">Details</th></tr>
<tr><td>1.</td><td>Proposed Name of the company</td><td colspan="4"></td></tr>
<tr><td>2.</td><td>Expected date of establishment</td><td colspan="4"></td></tr>
<tr><td rowspan="5">3.</td><td rowspan="5">Proposed List of investors/ shareholders</td><td>Name</td><td>Pan No.</td><td>CIBIL Score (enclose CIBIL Report)</td><td>Whether filing IT return (Yes/No)</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>4.</td><td>Proposed location of the new unit</td><td colspan="4"></td></tr>
<tr><td>5.</td><td>Connectivity and other details</td><td colspan="4">1. Is it a non-agricultural land? Yes/No
2. Whether the site is connected by motorable approach road? Yes/No
3. Whether the Road is a metallic road? Yes/No
4. Whether the area is a low lying area? Yes/No
5. Any incidence of flooding in the last 5 years in the area? Yes/No – If yes please mention the years
6. Whether power connection available? Yes/No
7. Whether drinking water supply available? Yes/No
8. Whether water supply available for industrial activity? Yes/No
9. Name of the nearest town/city
10. Distance from the nearest town/city
11. Nearest Police station – pl give name and distance
12. Any other information – please specify</td></tr>
</table>

Annexure 3: Maize Production in India 2019-20

Maize Production 2019-20			
Sr No.	**State**	**Production in '000 tonnes**	**Share(%)**
1	Karnataka	4,258.02	13
2	Madhya Pradesh	4,069.78	12.43
3	Kerala	3,985.81	12.17
4	Telangana	2,999.73	9.16
5	Tamil Nadu	2,476.20	7.56
6	Andhra Pradesh	2,016.98	6.16
7	West Bengal	2,007.62	6.13
8	Bihar	2,002.69	6.11
9	Maharashtra	1,960.14	5.98
10	Uttar Pradesh	1,693.57	5.17
11	Rajasthan	1,207.06	3.69
12	Gujarat	795.8	2.43
13	Himachal Pradesh	730.11	2.23
14	Jammu & Kashmir	541.37	1.65
15	Jharkhand	510.81	1.56
16	Punjab	410.38	1.25
17	Chattisgarh	344.93	1.05
18	Orissa	188.99	0.58
19	Nagaland	137.16	0.42
20	Assam	128.04	0.39
21	Arunachal Pradesh	80.2	0.24
22	Sikkim	67.91	0.21
23	Meghalaya	41.75	0.13
24	Uttarakhand	40.34	0.12
25	Tripura	22.97	0.07
26	Haryana	17	0.05
27	Mizoram	10.97	0.03
28	Manipur	4.94	0.02
29	Chandigarh	0.24	0
30	Dadra & Nagar Haveli	0	0
	Total	**32,751.51**	

Source – agriexchange.apeda.gov.in

Annexure 4: Assumptions/Basis of the project

Particulars	Value	Unit
Machine capacity for maize per day in tonne	2.4	tonne
Average Capacity Utilisation in the second year	50%	
Increase in capacity utilisation per year	5%	
Working hours	8	Hours
Working days per year	300	Days
Average working days per month	25	days
Final product as a percentage of raw material	60%	
Prefabricated godown price per sq ft incl installation	1000	Rupees
Cost of silo for 100 tonne	400000	Rupees
Godown size for finished goods	1000	sq ft.
GST, Installation, Transportation of equipment as percentage of equipment cost	30%	
Raw material Stock in Days	90	Days
Finished goods stock in days	30	Days
Interest on working capital and term loan	11%	
Power Consumption in units per day @ 100% capacity utilisation	600	Units
Increase/decrease in power consumption units for every percentage increase/ decrease in capacity utilisation in production per day	6	units
Increase in sale price/year	4%	
Rate per 0.5 kg pack of cornflakes in Rs.	80	Rupees
Increase in raw material & packaging cost	5%	
Raw material cost per tonne @ Rs.20/kg + 2/- per kg for flavours	22000	Rupees
Packaging material cost per 0.5kg including nitrogen requirement	3	Rupees
Creditors in percentage of the stock Value	25%	
Debtors in percentage of the stock value	15%	
Power tariff per unit consumed in Rs.	9.00	Rupees
Depreciation of plant and Machinery and office equipments	15%	
Depreciation of building	10%	
Own contribution in Working Capital	25%	
Own contribution in Fixed Cost	40%	
Maintenance cost as Percentage of fixed cost	20%	
Increase in salary expenses every year	10%	
Repayment of term loan in months	60	months
Moratorium in months	12	months
Income Tax	25%	
Variable cost under Repair and maintenance in percentage	25%	
Variable component in salary in percentage	10%	
Variable component in sale & Admin expenses	15%	
Variable component of electricity in percentage	98%	
Sales and branding expenses per annum in Rs.	1000000	Rupees
Misc Admin Expenses per annum @ 40000/- per month in Rs.	480000	Rupees
Transportation expenses per annum @ 10000/- per week in Rs.	480000	Rupees
Preoperative Expenses as percentage of project cost	1%	
Packaging Size in Kg	0.5	kg

Annexure 5: Interest on Bank Loan and Repayment Schedule

Principal Repayment per month			555116				
Year	**Particulars**	**Amount in Rs.**	**Interest**	**Repayment of principal**	**Closing Balance**	**Annual Interest payment**	**Projected Principal Repayment**
1	1st Month	24005000	220046	0	24005000		
	2nd Month	24005000	220046	0	24005000		
	3rd Month	24005000	220046	0	24005000		
	4th Month	24005000	220046	0	24005000		
	5th Month	24005000	220046	0	24005000		
	6th Month	24005000	220046	0	24005000		
	7th Month	24005000	220046	0	24005000		
	8th Month	24005000	220046	0	24005000		
	9th Month	24005000	220046	0	24005000		
	10th Month	24005000	220046	0	24005000		
	11th Month	24005000	220046	0	24005000		
	12th Month	24005000	220046	0	24005000	2640552	0
2	1st Month	26645552	244251	555116	26090436		
	2nd Month	26090436	239162	555116	25535320		
	3rd Month	25535320	234074	555116	24980204		
	4th Month	24980204	228985	555116	24425088		
	5th Month	24425088	223897	555116	23869972		
	6th Month	23869972	218808	555116	23314856		
	7th Month	23314856	213720	555116	22759740		
	8th Month	22759740	208631	555116	22204624		
	9th Month	22204624	203542	555116	21649508		
	10th Month	21649508	198454	555116	21094392		
	11th Month	21094392	193365	555116	20539276		
	12th Month	20539276	188277	555116	19984160	2595166	6661392

3	1st Month	19984160	183188	555116	19429044		
	2nd Month	19429044	178100	555116	18873928		
	3rd Month	18873928	173011	555116	18318812		
	4th Month	18318812	167922	555116	17763696		
	5th Month	17763696	162834	555116	17208580		
	6th Month	17208580	157745	555116	16653464		
	7th Month	16653464	152657	555116	16098348		
	8th Month	16098348	147568	555116	15543232		
	9th Month	15543232	142480	555116	14988116		
	10th Month	14988116	137391	555116	14433000		
	11th Month	14433000	132303	555116	13877884		
	12th Month	13877884	127214	555116	13322768	1862413	6661392
4	1st Month	13322768	122125	555116	12767652		
	2nd Month	12767652	117037	555116	12212536		
	3rd Month	12212536	111948	555116	11657420		
	4th Month	11657420	106860	555116	11102304		
	5th Month	11102304	101771	555116	10547188		
	6th Month	10547188	96683	555116	9992072		
	7th Month	9992072	91594	555116	9436956		
	8th Month	9436956	86505	555116	8881840		
	9th Month	8881840	81417	555116	8326724		
	10th Month	8326724	76328	555116	7771608		
	11th Month	7771608	71240	555116	7216492		
	12th Month	7216492	66151	555116	6661376	1129659	6661392
5	1st Month	6661376	61063	555116	6106260		
	2nd Month	6106260	55974	555116	5551144		
	3rd Month	5551144	50885	555116	4996028		
	4th Month	4996028	45797	555116	4440912		
	5th Month	4440912	40708	555116	3885796		
	6th Month	3885796	35620	555116	3330680		
	7th Month	3330680	30531	555116	2775564		
	8th Month	2775564	25443	555116	2220448		
	9th Month	2220448	20354	555116	1665332		
	10th Month	1665332	15266	555116	1110216		
	11th Month	1110216	10177	555116	555100		
	12th Month	555100	5088	555100	0	396906	6661376

Annexure 6: Illustrative List of Equipment Manufacturers

Vm Food Processing & Packaging Machines

No. 25/1, Bazar Lane,
Bhogal, Jangpura,
Delhi - 110014, India

Contact Person: Vijay Kumar
Mobile: +91 9953697613
Phone: 08048982928
Website: http://www.vmfoodmachines.com/

Grace Food Processing & Packaging Machinery

Nambardar Estate,
85, Taimoor Nagar,
New Friends Colony,
New Delhi - 110065,
Delhi, India

Phone: 08048618058
Website: https://www.gracefoodmachinery.com/

Syam Engineers Food Process

D-3 24, Sector 63,
Noida,
Gautam Budh Nagar-201307,
Uttar Pradesh, India

Phone: 08046031223
Website: https://www.indiamart.com/syamengineersfoodprocess/

Annexure 7: Indian Production of Tur (Arhar)

(000 Tonnes)

		2019-20	
Sr No.	State	Production	Share(%)
1	Karnataka	1,126.31	28.94
2	Maharashtra	1,084.32	27.86
3	Uttar Pradesh	279.3	7.18
4	Madhya Pradesh	274.65	7.06
5	Telangana	266.38	6.84
6	Jharkhand	241.63	6.21
7	Gujarat	210.79	5.42
8	Orissa	144.58	3.72
9	Andhra Pradesh	118.1	3.03
10	Tamil Nadu	53.22	1.37
11	Chattisgarh	32.13	0.83
12	Bihar	28.16	0.72
13	Rajasthan	5.19	0.13
14	Assam	5.04	0.13
15	West Bengal	4.13	0.11
16	Tripura	3.88	0.1
17	Nagaland	2.92	0.08
18	Uttarakhand	2.55	0.07
19	Punjab	2.19	0.06
20	Meghalaya	1.53	0.04
21	Dadra & Nagar Haveli	1.4	0.04
22	Haryana	1.24	0.03
23	Arunachal Pradesh	0.71	0.02
24	Kerala	0.52	0.01
25	Manipur	0.46	0.01
26	Mizoram	0.32	0.01
27	Himachal Pradesh	0.05	0
	Total	**3,891.70**	

Annexure 8: Assumptions/Basis of the project

Particulars	Value	Unit
Machine capacity for Pigeon pea per day in tonne (single shift)	8	tonne
Capacity Utilisation in the second year	65%	
Increase in capacity utilisation per year	5%	
Working hours per shift	8	Hours
Working days per year	300	Days
Average working days per month	25	days
Final product as a percentage of raw material	80%	
Raw material Stock in Days	90	Days
Finished goods stock in days	30	Days
Interest on working capital and term loan	11%	
Power Consumption in units per day @ 100% capacity utilisation	640	Units
Preoperative expenses	1%	
Increase in sale price /year for processed Pigeon pea and by-products	5%	
Rate per tonne of processed pigeon pea	95000	Rupees
Increase in raw material & packaging cost	7.50%	
Average price of unprocessed Pigeon pea per tonne	52000	
price of Pigeon pea Husk per tonne	18000	
Husk as percentage of Pigeon pea	7.50%	
Land	Own land	
Packaging material cost per 50 kg including printing cost	56	Rupees
Creditors in percentage of the stock Value	30%	
Debtors in percentage of the stock value	15%	
Power tariff per unit consumed in Rs.	9.00	Rupees
Depreciation of plant and Machinery and office equipments	15%	
Depreciation of building	10%	
Own contribution in Working Capital	25%	
Own contribution in Fixed Cost	40%	
Maintenance cost as Percentage of fixed cost	20%	
Increase in salary expenses every year	10%	
Repayment of term loan in months	60	months
Moratorium in months	12	months
Income Tax	25%	
Variable cost under Repair and maintenance in percentage	25%	
Variable component in salary in percentage	10%	
Variable component in sale & Admin expenses	15%	
Variable component of electricity in percentage	98%	
Sales and branding expenses per annum in Rs.	1000000	Rupees
Misc Admin Expenses per annum @ 40000/- per month in Rs.	480000	Rupees
Transportation expenses per annum @ 50000/- per week in Rs.	2400000	Rupees
Packaging Size	50	Kg

Annexure 9: Interest on Bank Loan and Repayment Schedule

Principal Repayment per month			352980				
Year	**Particulars**	**Amount in Rs.**	**Interest**	**Repayment of principal**	**Closing Balance**	**Annual Interest payment**	**Projected Principal Repayment**
1	1st Month	15264000	139920	0	15264000		
	2nd Month	15264000	139920	0	15264000		
	3rd Month	15264000	139920	0	15264000		
	4th Month	15264000	139920	0	15264000		
	5th Month	15264000	139920	0	15264000		
	6th Month	15264000	139920	0	15264000		
	7th Month	15264000	139920	0	15264000		
	8th Month	15264000	139920	0	15264000		
	9th Month	15264000	139920	0	15264000		
	10th Month	15264000	139920	0	15264000		
	11th Month	15264000	139920	0	15264000		
	12th Month	15264000	139920	0	15264000	1679040	0
2	1st Month	16943040	155311	352980	16590060		
	2nd Month	16590060	152076	352980	16237080		
	3rd Month	16237080	148840	352980	15884100		
	4th Month	15884100	145604	352980	15531120		
	5th Month	15531120	142369	352980	15178140		
	6th Month	15178140	139133	352980	14825160		
	7th Month	14825160	135897	352980	14472180		
	8th Month	14472180	132662	352980	14119200		
	9th Month	14119200	129426	352980	13766220		
	10th Month	13766220	126190	352980	13413240		
	11th Month	13413240	122955	352980	13060260		
	12th Month	13060260	119719	352980	12707280	1650182	4235760
3	1st Month	12707280	116483	352980	12354300		
	2nd Month	12354300	113248	352980	12001320		
	3rd Month	12001320	110012	352980	11648340		
	4th Month	11648340	106776	352980	11295360		
	5th Month	11295360	103541	352980	10942380		
	6th Month	10942380	100305	352980	10589400		
	7th Month	10589400	97070	352980	10236420		
	8th Month	10236420	93834	352980	9883440		
	9th Month	9883440	90598	352980	9530460		
	10th Month	9530460	87363	352980	9177480		
	11th Month	9177480	84127	352980	8824500		
	12th Month	8824500	80891	352980	8471520	1184248	4235760

4	1st Month	8471520	77656	352980	8118540		
	2nd Month	8118540	74420	352980	7765560		
	3rd Month	7765560	71184	352980	7412580		
	4th Month	7412580	67949	352980	7059600		
	5th Month	7059600	64713	352980	6706620		
	6th Month	6706620	61477	352980	6353640		
	7th Month	6353640	58242	352980	6000660		
	8th Month	6000660	55006	352980	5647680		
	9th Month	5647680	51770	352980	5294700		
	10th Month	5294700	48535	352980	4941720		
	11th Month	4941720	45299	352980	4588740		
	12th Month	4588740	42063	352980	4235760	718314	4235760
5	1st Month	4235760	38828	352980	3882780		
	2nd Month	3882780	35592	352980	3529800		
	3rd Month	3529800	32357	352980	3176820		
	4th Month	3176820	29121	352980	2823840		
	5th Month	2823840	25885	352980	2470860		
	6th Month	2470860	22650	352980	2117880		
	7th Month	2117880	19414	352980	1764900		
	8th Month	1764900	16178	352980	1411920		
	9th Month	1411920	12943	352980	1058940		
	10th Month	1058940	9707	352980	705960		
	11th Month	705960	6471	352980	352980		
	12th Month	352980	3236	352980	0	252382	4235760

Annexure 10: List of Equipment Suppliers

Shree Jalaram Engineering works

Plot No.D5, Phase 2, MIDC
Shivni, Shivani, Akola
Maharshtra, India – 444104

+91-9096707399, +91-9422163388 jalaramengg.akola@gmail.com
https://www.shrijalaramenggworks.co.in

VIJAY INDUSTRIAL UDYOG

Novelty Complex, Latouche Road, Kanpur,
Uttar Pradesh, India

Mobile : +91-9839024074, +91-9336892528
Email Address : vijayindustrialudyog@gmail.com
Web Site : http://www.vijayindustrialudyog.com

Binod Engineering

Raja Bazar, Behea, Bhojpur, Arrah,
Bihar, India - 802152
Phone: +91-6205580550

Email: rahulkumar766323@gmail.com binodeng.5251@gmail.com
Web Address: http://www.binodengineering.in

Rising Industries

Teghoria, Loknath Mandir, Jhowtala, Ghosh
Dutta Para, Sukantapally,
Kolkata - 700157, West Bengal, India

Phone: 08046026247
Website: https://www.risingmachinery.com/

SM Corporation

Plot No. 71B, Near Armenian Ferry Ghat,
Netaji Subhash Road, Kolkata-700001, West Bengal, India

Phone: 07942555043

Annexure 11: Maize Production in India 2019-20

Maize Production 2019-20			
Sr No.	**State**	**Production in '000 tonnes**	**Share(%)**
1	Karnataka	4,258.02	13
2	Madhya Pradesh	4,069.78	12.43
3	Kerala	3,985.81	12.17
4	Telangana	2,999.73	9.16
5	Tamil Nadu	2,476.20	7.56
6	Andhra Pradesh	2,016.98	6.16
7	West Bengal	2,007.62	6.13
8	Bihar	2,002.69	6.11
9	Maharashtra	1,960.14	5.98
10	Uttar Pradesh	1,693.57	5.17
11	Rajasthan	1,207.06	3.69
12	Gujarat	795.8	2.43
13	Himachal Pradesh	730.11	2.23
14	Jammu & Kashmir	541.37	1.65
15	Jharkhand	510.81	1.56
16	Punjab	410.38	1.25
17	Chattisgarh	344.93	1.05
18	Orissa	188.99	0.58
19	Nagaland	137.16	0.42
20	Assam	128.04	0.39
21	Arunachal Pradesh	80.2	0.24
22	Sikkim	67.91	0.21
23	Meghalaya	41.75	0.13
24	Uttarakhand	40.34	0.12
25	Tripura	22.97	0.07
26	Haryana	17	0.05
27	Mizoram	10.97	0.03
28	Manipur	4.94	0.02
29	Chandigarh	0.24	0
30	Dadra & Nagar Haveli	0	0
	Total	**32,751.51**	

Source – agriexchange.apeda.gov.in

Annexure 12: Assumptions/Basis of the project

Particulars	Value	Unit
Machine capacity for corn per day in tonne (2 shifts)	4	tonne
Capacity Utilisation in the second year	65%	
Increase in capacity utilisation per year	5%	
Working hours per shift	8	Hours
Working days per year	300	Days
Average working days per month	25	days
Final product as a percentage of raw material	72%	
Raw material Stock in Days	30	Days
Finished goods stock in days	30	Days
Interest on working capital and term loan	11%	
Power Consumption in units per day @ 100% capacity utilisation	800	Units
Increase in sale price/year for corn starch and by-products	5%	
Rate per kg of corn starch	150	
Rate per tonne of processed Corn Starch	150000	Rupees
Increase in raw material & packaging cost	7.50%	
Average price of corn kernel per tonne	35000	
Price of Corn Bran/fibre per tonne	15000	
Price of Corn germ per tonne	50000	
Price of Corn Gluten per tonne	44000	
Corn bran/fibre as percentage of kernel	14.00%	
Corn germ as percentage of kernel	5.00%	
Corn Gluten as percentage of kernel	9.00%	
Land	Own land	
Packaging material cost per 50 kg including printing cost	5	Rupees
Creditors in percentage of the stock Value	30%	
Debtors in percentage of the stock value	15%	
Power tariff per unit consumed in Rs.	9.00	Rupees
Depreciation of plant and Machinery and office equipments	15%	
Depreciation of building	10%	
Own contribution in Working Capital	25%	
Own contribution in Fixed Cost	40%	
Maintenance cost as Percentage of fixed cost	20%	
Increase in salary expenses every year	10%	
Repayment of term loan in months	60	months
Moratorium in months	12	months
Income Tax	25%	
Variable cost under Repair and maintenance in percentage	25%	
Variable component in salary in percentage	10%	
Variable component in sale & Admin expenses	15%	
Variable component of electricity in percentage	98%	
Sales and branding expenses per annum in Rs.	2000000	Rupees
Misc Admin Expenses per annum @ 40000/- per month in Rs.	480000	Rupees
Transportation expenses per annum @ 50000/- per week in Rs.	2400000	Rupees
Pre-operative Expenses as percentage of Project Cost	1%	
Packaging Size	1	Kg

Annexure 13: Interest on Bank Loan and Repayment Schedule

Principal Repayment per month			434288				
Year	Particulars	Amount in Rs.	Interest	Repayment of principal In Rs.	Closing Balance In Rs.	Annual Interest payment In Rs.	Projected Principal Repayment
1	1st Month	18780000	172150	0	18780000		
	2nd Month	18780000	172150	0	18780000		
	3rd Month	18780000	172150	0	18780000		
	4th Month	18780000	172150	0	18780000		
	5th Month	18780000	172150	0	18780000		
	6th Month	18780000	172150	0	18780000		
	7th Month	18780000	172150	0	18780000		
	8th Month	18780000	172150	0	18780000		
	9th Month	18780000	172150	0	18780000		
	10th Month	18780000	172150	0	18780000		
	11th Month	18780000	172150	0	18780000		
	12th Month	18780000	172150	0	18780000	2065800	0
2	1st Month	20845800	191087	434288	20411512		
	2nd Month	20411512	187106	434288	19977224		
	3rd Month	19977224	183125	434288	19542936		
	4th Month	19542936	179144	434288	19108648		
	5th Month	19108648	175163	434288	18674360		
	6th Month	18674360	171182	434288	18240072		
	7th Month	18240072	167201	434288	17805784		
	8th Month	17805784	163220	434288	17371496		
	9th Month	17371496	159239	434288	16937208		
	10th Month	16937208	155258	434288	16502920		
	11th Month	16502920	151277	434288	16068632		
	12th Month	16068632	147296	434288	15634344	2030298	5211456
3	1st Month	15634344	143315	434288	15200056		
	2nd Month	15200056	139334	434288	14765768		
	3rd Month	14765768	135353	434288	14331480		
	4th Month	14331480	131372	434288	13897192		
	5th Month	13897192	127391	434288	13462904		
	6th Month	13462904	123410	434288	13028616		
	7th Month	13028616	119429	434288	12594328		
	8th Month	12594328	115448	434288	12160040		
	9th Month	12160040	111467	434288	11725752		
	10th Month	11725752	107486	434288	11291464		
	11th Month	11291464	103505	434288	10857176		
	12th Month	10857176	99524	434288	10422888	1457034	5211456

4	1st Month	10422888	95543	434288	9988600		
	2nd Month	9988600	91562	434288	9554312		
	3rd Month	9554312	87581	434288	9120024		
	4th Month	9120024	83600	434288	8685736		
	5th Month	8685736	79619	434288	8251448		
	6th Month	8251448	75638	434288	7817160		
	7th Month	7817160	71657	434288	7382872		
	8th Month	7382872	67676	434288	6948584		
	9th Month	6948584	63695	434288	6514296		
	10th Month	6514296	59714	434288	6080008		
	11th Month	6080008	55733	434288	5645720		
	12th Month	5645720	51752	434288	5211432	883770	5211456
5	1st Month	5211432	47771	434288	4777144		
	2nd Month	4777144	43790	434288	4342856		
	3rd Month	4342856	39810	434288	3908568		
	4th Month	3908568	35829	434288	3474280		
	5th Month	3474280	31848	434288	3039992		
	6th Month	3039992	27867	434288	2605704		
	7th Month	2605704	23886	434288	2171416		
	8th Month	2171416	19905	434288	1737128		
	9th Month	1737128	15924	434288	1302840		
	10th Month	1302840	11943	434288	868552		
	11th Month	868552	7962	434288	434264		
	12th Month	434264	3981	434264	0	310516	5211432

Annexure 14: Illustrative list of Equipment Manufacturers

Labh Group of Companies Address:

4th Floor, Sarthik Square,
Pakvan Cross Road,
S G Highway,
Ahmedabad – 380 054 (INDIA)
Phone: +91 79 6661 1888
+91 79 6661 1999
Email: info@labhgroup.com
Website : https://labhgroup.com/

Agro Processing Solutions

Address:
8, Radhe Industrial Estate Behind Akruti Arcade,
NH-8A, Bavla,
Ahmedabad-382220,
Gujarat, India

Phone: 08046037743

Avity Agrotech Pvt. Ltd.

ADDRESS
Plot No. 989/4, G. I. D. C,
Makarpura,
Vadodara - 390010,
Gujarat, India

Phone: 0804538491
Website: https://www.avityagrotech.com/

Annexure 15: Cost Sheet for Paddy Procurement and share of the Rice miller

Item	2020-21	2021-22 (Estimated)	Remarks	Share of Rice miller
Minimum Support Price of Paddy	1868.00	1940.00	This will go to the farmer	0
Statutory charges: Market fee@0.5% of MSP	9.34	9.70	This will go to to the market	0
Mandi labour charges (handling charges)	10.33	10.33	Will be paid for Rice Mill owner for labour charges	10.33
Avg Rate of transportation of Paddy	25.88	25.88	Will go to the miller as he has to make the transportation arrangements	25.88
Driage	18.68	19.40	Assuming that miller makes arrangement for storage	19.4
Custody and maintenance charges @ 2.4/month	2.40	2.40	As miller is storing it, it will go to him. If not it would be retained by the procurement agency	2.4
Interest charges for 1 month @ 8.78%	13.75	14.25	Interest on money paid to farmer by agency	0
Milling Charges	20.00	20.00	Goes to miller	20
Admin charges @ 1% of MSP	18.68	19.40	Agency admin charges-not for miller	0
Commission to Coop/SHG	31.25	31.25	To be paid to coop/SHG helping in collection	0
Cost of 1 quintal of milled paddy	2018.31	2092.61		0
Out turn ratio	67%	67%		
Sub-Total	3012.40	3123.30		0
Cost of 2 gunny bags	111.46	111.46	Will go to the millerand he has to buy specified gunny bags	111.46
Usage charges for packing of paddy	28.98	28.98	will go to miller	28.98
Acquisition of 1 quintal of packed rice	3152.84	3263.74		218.45

Annexure 16: Assumptions/Basis of the project

Particulars	Value	Unit
Machine capacity for paddy per day in tonne (2 shifts i.e. 16 hrs)	80	tonne
Capacity Utilisation in the second year	65%	
Increase in capacity utilisation per year	5%	
Working hours per shift	8	Hours
Working days per year	300	Days
Average working days per month	25	days
Final product as a percentage of raw material	67%	
Raw material Stock in Days	180	Days
Finished goods stock in days	30	Days
Interest on working capital and term loan	11%	
Power Consumption in units per day @ 100% capacity utilisation	10000	Units
Preoperative Expenses	1%	
Increase in sale price/year for rice and by-products	5%	
Rate per tonne of processed rice	26622.7	Rupees
Increase in raw material & packaging cost	7.50%	
Average price of Paddy per tonne	13580	
Price of rice bran per tonne	32000	
Price of Paddy Husk per tonne	3600	
Rice bran as percentage of paddy (between 4-9%)	6.50%	
Husk as percentage of paddy (between 17-24%)	20.00%	
Land	Own land	
Packaging material cost per 50 kg including printing cost	56	Rupees
Creditors in percentage of the stock Value	30%	
Debtors in percentage of the stock value	15%	
Power tariff per unit consumed in Rs.	9.00	Rupees
Depreciation of plant and Machinery and office equipments	15%	
Depreciation of building	10%	
Own contribution in Working Capital	25%	
Own contribution in Fixed Cost	40%	
Maintenance cost as Percentage of fixed cost	20%	
Increase in salary expenses every year	10%	
Repayment of term loan in months	60	months
Moratorium in months	12	months
Income Tax	25%	
Variable cost under Repair and maintenance in percentage	25%	
Variable component in salary in percentage	10%	
Variable component in sale & Admin expenses	15%	
Variable component of electricity in percentage	98%	
Sales and branding expenses per annum in Rs.	1000000	Rupees
Misc Admin Expenses per annum @ 40000/- per month in Rs.	480000	Rupees
Transportation expenses per annum @ 50000/- per week in Rs.	2400000	Rupees
Packaging Size	50	Kg
Source of paddy - Govt agency:Direct collection	30:70	Ratio

Annexure 17: Interest on Bank Loan and Repayment Schedule

Principal Repayment per month			1117747				
Year	Particulars	Amount in Rs.	Interest	Repayment of principal in Rs.	Closing Balance in Rs.	Annual Interest payment in Rs.	Projected Principal Repayment
1	1st Month	48335000	443071	0	48335000		
	2nd Month	48335000	443071	0	48335000		
	3rd Month	48335000	443071	0	48335000		
	4th Month	48335000	443071	0	48335000		
	5th Month	48335000	443071	0	48335000		
	6th Month	48335000	443071	0	48335000		
	7th Month	48335000	443071	0	48335000		
	8th Month	48335000	443071	0	48335000		
	9th Month	48335000	443071	0	48335000		
	10th Month	48335000	443071	0	48335000		
	11th Month	48335000	443071	0	48335000		
	12th Month	48335000	443071	0	48335000	5316852	0
2	1st Month	53651852	491809	1117747	52534105		
	2nd Month	52534105	481563	1117747	51416358		
	3rd Month	51416358	471317	1117747	50298611		
	4th Month	50298611	461071	1117747	49180864		
	5th Month	49180864	450825	1117747	48063117		
	6th Month	48063117	440579	1117747	46945370		
	7th Month	46945370	430333	1117747	45827623		
	8th Month	45827623	420087	1117747	44709876		
	9th Month	44709876	409841	1117747	43592129		
	10th Month	43592129	399595	1117747	42474382		
	11th Month	42474382	389349	1117747	41356635		
	12th Month	41356635	379102	1117747	40238888	5225471	13412964
3	1st Month	40238888	368856	1117747	39121141		
	2nd Month	39121141	358610	1117747	38003394		
	3rd Month	38003394	348364	1117747	36885647		
	4th Month	36885647	338118	1117747	35767900		
	5th Month	35767900	327872	1117747	34650153		
	6th Month	34650153	317626	1117747	33532406		
	7th Month	33532406	307380	1117747	32414659		
	8th Month	32414659	297134	1117747	31296912		
	9th Month	31296912	286888	1117747	30179165		
	10th Month	30179165	276642	1117747	29061418		
	11th Month	29061418	266396	1117747	27943671		
	12th Month	27943671	256150	1117747	26825924	3750036	13412964

4	1st Month	26825924	245904	1117747	25708177		
	2nd Month	25708177	235658	1117747	24590430		
	3rd Month	24590430	225412	1117747	23472683		
	4th Month	23472683	215166	1117747	22354936		
	5th Month	22354936	204920	1117747	21237189		
	6th Month	21237189	194674	1117747	20119442		
	7th Month	20119442	184428	1117747	19001695		
	8th Month	19001695	174182	1117747	17883948		
	9th Month	17883948	163936	1117747	16766201		
	10th Month	16766201	153690	1117747	15648454		
	11th Month	15648454	143444	1117747	14530707		
	12th Month	14530707	133198	1117747	13412960	2274612	13412964
5	1st Month	13412960	122952	1117747	12295213		
	2nd Month	12295213	112706	1117747	11177466		
	3rd Month	11177466	102460	1117747	10059719		
	4th Month	10059719	92214	1117747	8941972		
	5th Month	8941972	81968	1117747	7824225		
	6th Month	7824225	71722	1117747	6706478		
	7th Month	6706478	61476	1117747	5588731		
	8th Month	5588731	51230	1117747	4470984		
	9th Month	4470984	40984	1117747	3353237		
	10th Month	3353237	30738	1117747	2235490		
	11th Month	2235490	20492	1117747	1117743		
	12th Month	1117743	10246	1117743	0	799188	13412960

Annexure 18: Equipment Manufacturer

SATAKE INDIA ENGINEERING PVT. LTD.

4th Floor,HB Twin Towers,
Tower No.-1
A-2, 3,4, Netaji Subhash Place,
Wazirpur District Center,
New Delhi-110034 (India)
E-MAIL: sales@satakeindia.com
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Bühler Group India

13-D,12-D,13-C and 13-B KIADB Industrial Area,
Attibele - 562107, Karnataka
Tel: +91-80- 677 70000