



PM Formalisation of Micro Food Processing Enterprises Scheme

DETAILED PROJECT REPORT FOR PROCESSING OF DESICCATED COCONUT



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1 EXECUTIVE SUMMARY

Desiccated coconut is coconut meat that is flaked and dried and is available in unsweetened and sweetened forms. It is an easy topping for a variety of dishes ranging from desserts and cereals to Asian curries for a flavorful addition that also contains a nutritional value.

Desiccated coconut has traditionally been used in a lot Asian dishes as toppings and ingredients in curries, cooked cereal and baked food. Europe is the largest importer for desiccated coconut. In Western Europe, Belgium is the major consumer for desiccated coconut followed by Germany, Netherlands and U.K. In North American region U.S. accounts for most of desiccated coconut. European market for desiccated coconut is expected to show considerably high growth. In Asia-Pacific region India, Singapore are the major consumers for desiccated coconuts.

The meat is shredded or disintegrated and dried in hot air driers at 140-170oF to 2 per cent moisture content (fat 65-68 % and Solids nonfat 30-32%) and used in the manufacture of cakes, pastries and chocolates. Desiccated coconut is the disintegrated, white kernel of coconut processed under strict hygienic conditions and dried to a moisture content of below 3.0 per cent. It is a food product which is ready and fit for direct human consumption.

TABLE 1
PROJECT AT GLANCE

| | | |
|----|---|--|
| 1 | Name of the proposed project | Coconut Processing Unit |
| 2 | Name of the entrepreneur/FPO/SHG/ Cooperative | |
| 3 | Nature of proposed project | |
| 4 | Registered office | |
| 5 | Project site/location | |
| 6 | Names of Partner (if partnership) | |
| 7 | No of shareholders (if company/FPC) | |
| 8 | Technical advisor | |
| 9 | Marketing advisor/partners | |
| 10 | Proposed project capacity | 375 Kg/day (60, 70 & 80% capacity utilization in the 2nd, 3rd and 4th years' onwards respectively) |
| 11 | Raw materials | Coconut Processing Unit |
| 12 | Major product outputs | Desiccated coconut |
| 13 | Total project cost : | Rs. 19.37 Lakhs |
| | · Land development, building & civil : construction | Rs.3.50 Lakh |
| | · Machinery and Equipment's : (Lakhs) | Rs .10.25 Lakh |
| | · Utilities (Power & water facilities) : (Lakhs) | Rs. 0.8 Lakh |
| | · Miscellaneous fixed assets : (Lakhs) | Rs. 0.8 Lakh |
| | · Pre-operative expenses : (Lakhs) | Rs. 1.00 Lakh |
| | · Contingencies : (Lakhs) | Rs. 2.00 Lakh |
| | · Working capital margin : (Lakhs) | Rs. 1.02 Lakh |
| 14 | Working capital requirement | |
| | · 2nd year (Lakhs) | Rs. 2.54 Lakh |
| | · 3rd year (Lakhs) | Rs. 3.02 Lakh |
| | · 4th year (Lakhs) | Rs. 3.49 Lakh |
| 15 | Means of Finance | |
| | · Subsidy grant by MoFPI (max 10 lakhs) : : | Rs. 10.00 Lakhs |
| | · Promoter's contribution (min 20%) | Rs. 3.87 Lakhs |
| | · Term loan (45%) : | Rs. 5.49 Lakhs |
| 16 | Debt-equity ratio | 0.73 |
| 17 | Profit after Depreciation, Interest & Tax | |
| | · 2nd year (Lakhs) | Rs. 4.99 Lakh |
| | · 3rd year (Lakhs) | Rs. 2.37 Lakh |
| | · 4th year (Lakhs) | Rs. 3.54 Lakh |
| 18 | Average DSCR | 2.03 |
| 19 | Benefit-Cost Ratio | 1.04 |

| | | |
|----|-------------------------------|---------------------------------|
| 20 | Term loan repayment | 7 Years with 1year grace period |
| 21 | Payback period for investment | 4years |

2 OBJECTIVE OF THE PROJECT

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

Some important objectives behind setup of “Desiccate Coconut Processing Unit” are:

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

3 PROJECT PROFILE

TABLE 2
PROJECT DESCRIPTION

| PARTICULARS | DESCRIPTION |
|--------------------------------------|---|
| Project Name | “SET UP OF DESICCATED COCONUT MANUFACTURING UNIT” |
| Project Location | NA |
| Project Area | 5000 SqFt |
| Project Proposed Economic Activities | ✓ Setup of Desiccated Coconut Manufacturing Unit with optimum capacity |
| Project Capacity/Day | Desiccated Coconut Manufacturing Unit ✓ 375 kg / Day Capacity |

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

4.1 INTRODUCTION

The coconut palm (*Cocos nucifera*) serves a multifunctional role in the Caribbean region where it is commonly grown. Small-scale production of products from the coconut palm makes an important contribution to food security. At the industrial level, the coconut industry is an important source of employment and income in rural communities. The coconut produces a variety of products which are consumed in the region and internationally. These include fresh green and dry nuts, copra, coconut oil and coconut water among others. Coconut oil is consumed as food while a significant amount goes into the oleo-chemical industry. It is also used in food preparation. Additionally, the shell is used for various fibres, charcoal, and other products not yet fully commercialized. There is potential for supplies to both the regional and export markets in the USA, Canada, and European Union markets which are major destinations for coconut oil and coconut products. Principal among these is the suspected adverse health and nutrition effects on humans but studies, such as that conducted by Spade and Dietchy (1988), have shown that coconut oil prevents the formation of hepatic cholesterol esters. In addition to this, the lauric acid found in coconut oil provides the disease-fighting fatty acid monolaurin which boosts the immune system. The bottling and storage of coconut water for extended shelf life and improved marketability is still posing a serious challenge to packers. Research & Development could also improve the yield and profitability of coconut intended for the bottled water market or coconut intended for other uses such as oils or fibres.

4.2 ORIGIN, DISTRIBUTION AND PRODUCTION OF COCONUT

The origin of coconut palm is the subject of controversy. Indian mythology credits the creation of palm with its crown of leafy fronds to the sage Vishwamitra, to prop up his friend King Trishanku when the latter was literally thrown out of heaven by Indra for his misdeeds. In Vadakurungaduthurai, Lord Kulavanangeesar is believed to have taken the form of a coconut tree to help quench the thirst of a pregnant woman. In Kerala, Goddess Bhagavati is believed to be the soul of the coconut tree. One of the Goddess's common epithets is Kurumba which means 'tender coconut'. Folktales of all other areas narrate that coconut originated from head of a dead man or from a dead eel.

Coconut is grown in a large area in India in an area of more than 21 Lakh Hectares. Tamil Nadu, Kerala, Karnataka and Andhra Pradesh are the leading coconut producing states in India and these states account for more than 90 per cent of the total coconut produced in the country. Productivity increased to 11516 fruits per hectare in 2017-18 as compared to 10122 in 2013-14. Between 2014 and 2018, 13,117 hectares were brought under new plantation as compared to 9,561 hectares during 2010-2014. Due to this increase in production of coconut, India has been exporting coconut oil to Malaysia, Indonesia and Sri Lanka since April 2017. Till March 2017, India was importing Coconut oil.

TABLE 3
ALL INDIA AREA PRODUCTION AND PRODUCTIVITY OF COCONUT

| Sr. No | States | AREA (In HA) | Production (Million nuts) | Productivity (Nuts/ha) |
|---------------|------------------|-------------------------|--------------------------------------|-----------------------------------|
| 1 | Kerala | 770.62 | 7429.39 | 9641 |
| 2 | Tamil Nadu | 459.74 | 6171.06 | 13423 |
| 3 | Karnataka | 526.38 | 5128.84 | 9744 |
| 4 | Andhra Pradesh | 103.95 | 1427.46 | 13732 |
| 5 | West Bengal | 29.51 | 373.58 | 12658 |
| 6 | Odisha | 50.91 | 328.38 | 6451 |
| 7 | Gujrat | 22.81 | 312.68 | 13706 |
| 8 | Maharashtra | 22.75 | 271.24 | 9775 |
| 9 | Bihar | 14.9 | 141.38 | 9489 |
| 10 | Assam | 19.73 | 132.59 | 6720 |
| 11 | Chhattisgarh | 1.85 | 30.54 | 16508 |
| 12 | Tripura | 7.2 | 29.51 | 4097 |
| 13 | Nagaland | 0.33 | 2.67 | 8091 |
| 14 | Other | 52.8 | 388.13 | 7351 |
| | ALL INDIA | 2083.48 | 22167.45 | 141386 |

4.3 HEALTH BENEFITS AND NUTRITIONAL IMPORTANCE

- Coconut kernel is nutritious and rich in fiber, vitamins and minerals.
- Coconut is a natural anti-bacterial and anti-viral food.
- You can get the benefit of coconut fibre by eating fresh or dried coconut and adding coconut to recipes.
- A multitude of studies have demonstrated that dietary fibre protects against heart attacks and strokes.
- Diet rich in coconut kernel prevent digestive disorders and it regulates bowel activity.
- It restores thyroid functions and increases the metabolic rate.

TABLE 4 NUTRITIONAL COMPOSITION OF COCONUT (45 GM EDIBLE PORTION)

| Sr.No | Nutrient | Amount |
|--------------|-----------------|---------------|
| 1 | Calories | 160 |
| 2 | Carbohydrate | 6.8 g |
| 3 | Protein | 1.5 g |
| 4 | Fat | 1.5 g |
| 5 | Fiber | 4 g |
| 6 | Sugar | 2.8g |
| 7 | Sodium | 9 mg |

4.4 CULTIVATION, BEARING AND POST-HARVEST MANAGERMENTS

Coconut is a tropical crop and is grown where temperature is 25° to 30°C and a fairly well distributed annual rainfall of 125 to 130 cm. In a few places, especially in Orissa, coconut is grown with as little as 100 cm annual rainfall.

Frost and drought are very harmful to coconut. It is predominantly grown under rainfed condition in Kerala and parts of coastal Karnataka and Tamil Nadu. In rest of the country it is mainly grown under irrigated conditions. Well drained rich loamy soils are best suited for its cultivation. It grows well on sandy loams along sea-coasts and in adjoining river valleys.

Saplings of coconut palm are first raised in nurseries and after one year these are transplanted in the garden. The tree starts bearing fruits after 6-7 years and continues to yield harvest for 60-80 years. For better yield the land has to be ploughed or hoed once or twice in a year. Tender nuts are plucked up for juice after 6 or 7 months while ripen nuts are harvested after 11 months for copra and oil. Generally one thousand nuts produce about 150 kg of copra.

The coconut palm is found to grow under varying climatic and soil conditions. It is essentially a tropical plant, growing mostly between 20° N and 20° S latitudes. The ideal temperature for coconut growth and yield is 27 ± 5° C and humidity > 60 per cent. The coconut palm grows well upto an elevation of 600 m above MSL. However, near the equator, productive coconut plantations can be established up to an elevation of about 1000 m above MSL. The palms tolerate wide range in intensity and distribution of rainfall. However, a well distributed rainfall of about 200 cm per year is the best for proper growth and higher yield. In areas of inadequate rainfall with uneven distribution, irrigation is required.

Post-Harvest Management: -

Coconuts are harvested at different stages of maturity for specific uses. For tender nut purpose, harvesting is done when the nuts are six to eight months old. For snowball tender nut and coconut chips

purpose, eight to nine and nine to ten month old nuts are harvested respectively. For the production of copra and other kernel based products, only fully mature coconuts are harvested. The nuts reach full maturity in 11 to 12 months after the inflorescence is opened. At this stage, the output of copra and oil as well as brown fibre would be the maximum. In a study in India, it was found that compared to 12 month old nuts, the copra yield was less to the extent of six percent in 11 month old nuts, 16 percent in 10 month old nuts and 33 percent in nine month old nuts. The corresponding reduction in the percentage of oil was found to be five, 15 and 33 percent respectively. In places where green husks are in demand for the production of white fibre, the usual practice is to harvest 11 month old nuts. The slightly low copra output at this stage would, however, be compensated by the additional income derived from the fibre and its products.

Though the coconut palm produces an average of 12 inflorescences in one year, some of the inflorescences are likely to abort or may fail to develop into fruit bunches due to environmental factors. Consequently, the number of bunches available for harvest is less than 12 in many areas. Similarly, the frequency of harvest also varies from country to country and also within the countries. In many areas, six to twelve harvests per year are the usual practice. In the properly managed gardens, harvest at monthly intervals is usually adopted. In the neglected gardens, bunches are not produced regularly and, as such, not more than six harvests are possible in a year. In most of the coconut growing countries, harvesting is done at bimonthly intervals and only fully mature nuts of 12 months or above are harvested.

4.5 PROCESSING AND VALUE ADDITION IN INDIA

There exists a huge scope for coconut based agri-business in India in order to increase the present 8% level of value addition to 25%, thereby value added products becoming a deciding factor in the price movement of coconut to ensure fair, reasonable and steady price to coconut farmers. Foreseeing the imperativeness of high value coconut sector, ICAR CPCRI has developed complete package of practices for the production of virgin coconut oil (hot and fermentation process), coconut chips, coconut honey, jaggery and sugar. The Institute has also developed a technology for collecting coconut inflorescence sap by using a device. The sap thus collected is called Kalparasa. Kalparasa can be preserved up to 45 days under cold condition (in refrigerator) without adding any preservatives and additives with the bottling technology. It has been demonstrated that a farmer tapping 15 coconut palms for Kalparasa could earn on an average Rs. 45,000 a month, while a tapper can earn about Rs. 20,000 per month. For sustaining the value added coconut sector, Women Self Help Groups were formed and equipped with technical know-how and smooth functioning of the coconut value chain was ensured through continuous supply of value added products to the downstream part of the chain. An activated carbon plant was designed for the production of pollution free coconut shell charcoal for community level processing at small scale level. With regard to the commercialization of technologies Institute had successfully developed market for the value added products through well-established link with the retail distributor. Moreover, the marketing functionary was made a part of the value chain through appropriate integration techniques adopted and there by ensured the efficient functioning of the chain.

5 MODEL DESICCATED COCONUT PROCESSING UNDER FME SCHEME

5.1 LOCATION OF PROPOSED PROJECT AND LAND

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

The ideal locations for establishment of exclusive Desiccated Coconut processing unit are in the production clusters of Coconut growing states/Areas such as Kerala, Karnataka , Andhra Pradesh ,Tamilnadu , Maharashtra , Odisha. where adequate quantities of surplus raw materials can be available for processing.

5.2 INSTALLED CAPACITY OF DESICCATED COCONUT PROCESSING PLANT

The maximum installed capacity of the manufacturing unit in the present model project is proposed as 375 kg/day Desiccated coconut. The unit is assumed to operate 300 days/annum @ 8-10 hrs/day. The 1st year is assumed to be construction/expansion period of the project; and in the 2nd year 60 percent capacity, 3rd year 70 percent capacity and 4th year onwards 80 percent capacity utilization is assumed in this model project.

5.3 RAW MATERIAL REQUIREMENT FOR THE UNIT

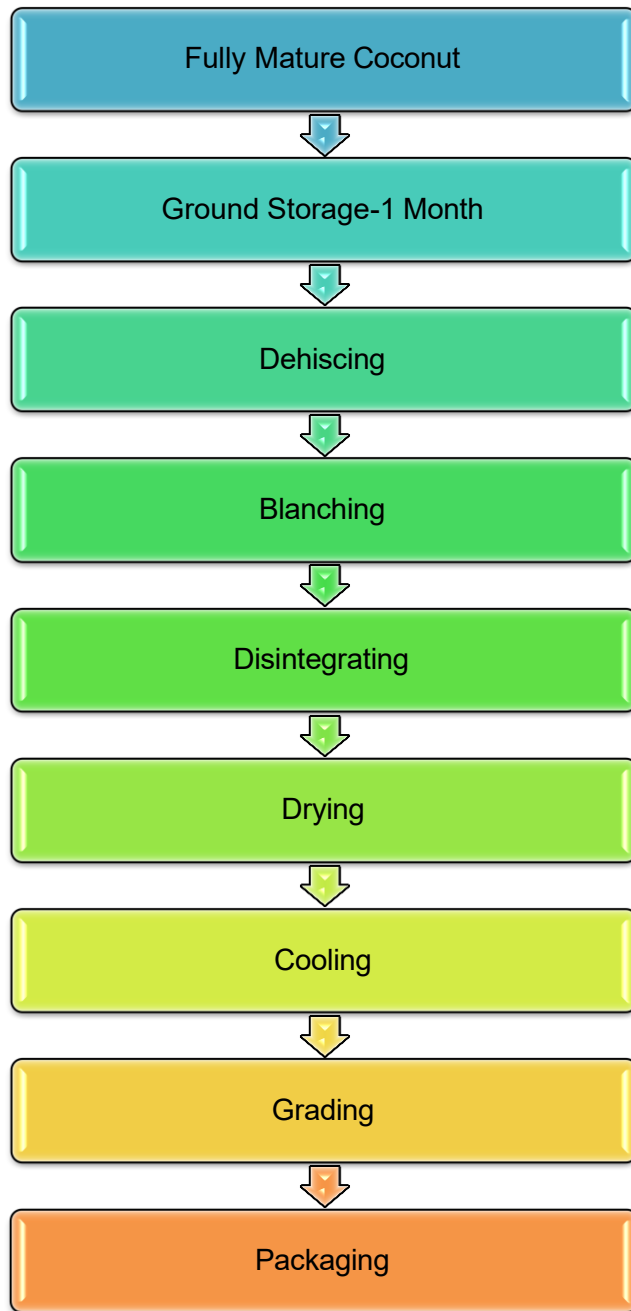
A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 300 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory. The processor must have linkage with producer organizations preferably FPCs through legal contract to get adequate quantity and quality of raw materials which otherwise get spoiled.

5.4 MANUFACTURING PROCESS

Desiccated Coconut

Desiccated coconut, the edible dried-out shredded coconut meat is prepared from fresh kernel of fully matured coconut and it is available in coarse, medium and fine grades and also in special grades such as threads, strips, granules etc. Good desiccated coconut is crisp, snow white in colour with a sweet, pleasant and fresh taste of coconut kernel. Desiccated coconut, a commercial product was manufactured from the white part of the meat after removing the brown parings. The meat is shredded or disintegrated and dried in hot air driers at 140-170oF to 2 per cent moisture content (fat 65-68 % and Solids nonfat 30-32%) and used in the manufacture of cakes, pastries and chocolates. Desiccated coconut is the disintegrated, white kernel of coconut processed under strict hygienic conditions and dried to a moisture content of below 3.0 per cent. It is a food product which is ready and fit for direct human consumption.

FIGURE 1 DESICCATED COCONUT PROCOESS FLOWCHART



Harvesting

The stage of maturity of harvest of coconuts for Desiccated Coconut production is very crucial. The quality of desiccated coconut depends upon the quality of coconuts used. Fully matured coconuts of about 11-12 months are used for the preparation of desiccated coconut. Immature nuts tend to produce rubbery kernel. Foul smelling nuts should not be selected.

Ground storage

Ground storage of coconuts should be done for a month period. During this process, the coconut water gets absorbed and the kernel grows thicker and harder thus producing a more suitable material for desiccated coconut production. The coconuts are then de-husked.

De-husking

The de-husked coconut undergoes dehiscing. Dehiscing process involves the following steps

- Deshelling without breaking the kernel - the outer shell is removed. This is done manually or mechanically.
- Paring - removing the brown testa. This is done by scraping it off manually using paring knives. Almost 15% of the kernels is lost as paring during this process. Mechanical paring can also be employed.
- Washing the kernels to remove any remaining testa particles adhering to the surface of the kernel. This should be done using clean potable water.
- Slicing the pared kernel into two halves to release the coconut water.

Blanching

The kernels are immersed in boiling water for 8-10 minutes in a blanching tank. Alternatively passing live steam at 88°C through the kernels for 5 minutes can also be done for blanching of the kernels. Blanching kills fungus and viruses. Blanching is a crucial step to make good quality desiccated coconut powder.

Disintegrating

The blanched coconuts are shredded into small pieces. This is done using a disintegrator, which is an impact pulverizer with hammer heads. The hammer heads crush and grind the coconut meat to powdered form.

Disintegrator is capable of producing different sizes from 1mm to 5mm continuously. Different shapes and fancy cuts are also done.

Drying

The granules are then dried in a drier; the temperature in the drying chamber is maintained at about 80-90°C for 40-45 minutes. The maximum moisture content of the end product should be 3%; only at this moisture content, the product will have an increased shelf life. The following types of dryers can be employed.

- **Tray dryer**

The granules are spread out uniformly in trays. The granules are stirred occasionally during the process to ensure uniform drying. During this process the trays are moved twice and the content raked over in order to ensure uniform drying and to break up any lumps that might have formed.

- **Rotary dryer**

The arrangement consists of a cylindrical rotating drum into which the coconut powder is fed using a hopper.

- **Vibro fluid bed dryer**

This is an extension of fluidised bed techniques, by using vibrations as an external aid to fluidisation. Vibrations breakup the inter-particle forces of attraction and improve quality of fluidization.

Cooling & Grading

The dried product is allowed to cool to ambient temperature on stainless steel tables, and then sifted into coarse, medium, fine (macaroon) and extra fine grades. Grading happens in a vibratory screen with different screens such as 12, 14 and 16 mesh. The graded desiccated coconut goes to packing. In fully mechanized plants, the cooling system is integrated into the drying system.

Packaging

The desiccated coconut is packed semi-automatically for bulk packages and automatic form fill seal machines for retail packages.

5.5 MAEKRT DEMAND AND SUPPLY FOR DESICCATED COCONUT

Coconut plays a very significant role in the economy of India. India is the leading coconut producer in the world (31%) with a production of 20440 million nuts from an area of 1975 thousand hectares. The productivity of India is the highest (10614 nuts/ha) among major coconut producing countries in the world. The present production of arecanut in the world is about 1.13 million tonnes from an area of 0.91 million ha. India ranks first in both area and production of the crop. The overall average yield per hectare has improved from 843 kg/ha during 1971 to 1558 kg/ha by the year 2016. Average yield of newly

released coconut varieties is around 120 nuts/ palm/ year which is double the national average of 60 nuts/ palm/ year. By adopting the new varieties, the existing crop productivity levels can be enhanced to the tune of 100% in terms of nut/copra yield. In terms of Gross Value Output, coconut contributes Rs. 95000 million to the national income. Coconut industry provides livelihood to about twelve million people in India. Coconut tree is called as "Kalpa Vriksha" which essentially means that all parts of a coconut tree is useful in one way or the other. Coconut palms have many uses; their leaves are used for thatching traditional houses, making sheds, baskets, and the husk for making coir and other coir products. The shell is used for making charcoal and activated carbon, ladles and spoons, and fruits for making copra and coconut oil and other value added products. Coconut is a staple ingredient in traditional cuisines of many states. Technology for collection of fresh, hygienic and unfermented coconut inflorescence sap (Kalparasa) has been developed. Other value added products like coconut sugar, virgin coconut oil, coconut chips, dark chocolate, drinking chocolate, frozen delicacy etc. and their adoption has improved the income of farmers and also generated employment in coconut sector..

5.6 MARKETING STRATEGY FOR COCONUT PRODUCTS

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

5.7 DETAIL PROJECT ASSUMPTIONS

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

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

**TABLE 5
PROJECT DETAILS**

| Detailed Project Assumptions | | |
|-------------------------------------|---------------------------------|--|
| SR.NO | Parameter | Value |
| 1 | Capacity of the processing unit | 1500Kg/Day coconut |
| 2 | Utilization of capacity | 1st year implementation, 60% in 2nd year, 70% in 3rd year and 80% in 4th year onwards. |

| | | |
|---|---|---|
| 3 | Working days per year | 300 days |
| 4 | Working hours per day | 8 hrs. |
| 5 | Interest on term and working capital loan | 12% |
| 6 | Repayment period | Seven years with one year grace period is considered. |
| 7 | Average prices of raw material | Rs. 10/Kg. |
| 8 | Average sale prices | Rs. 70/Kg. |
| 9 | Recovery rate | 25% |

TABLE 6
FIXED CAPITAL INVESTMENT

| Sr. No. | Particulars | Size/ Dimensions / Specification | Quantity (No) | Total Area (Sq ft) | Unit Cost (Rs) | Amount (Rs) | Amount (Lakh) |
|-----------|---|----------------------------------|---------------|--------------------|----------------|------------------|---------------|
| A | Capital Investment | | 1 Plot | | | | |
| | | | | | | 3,50,000 | 3.50 |
| | Capital Investment | | | | | 3,50,000 | 3.50 |
| B | Machinery & Equipment's | | | | | | |
| 1 | Cabinet type hot air drier with blower, motor and other accessories | | 1 | | 190000 | 1,90,000 | 1.90 |
| 2 | Disintegrator | | 1 | | 105000 | 1,05,000 | 1.05 |
| 3 | Vibratory sifting machine | | 1 | | 50,000 | 50,000 | 0.50 |
| 4 | Platform weighing balance | | 1 | | 20000 | 20,000 | 0.20 |
| 5 | Packaging Machinery | 2000 pack/hr | 1 | | 650000 | 6,50,000 | 6.50 |
| 6 | Miscellaneous | | 1 | | 10000 | 10,000 | 0.10 |
| | Machinery & Equipment's | | | | | 10,25,000 | 10.25 |
| C | Other Costs | | | | | | |
| C1 | Utilities & Fittings | | | | | | |
| 1 | Water | | | | | | 0.80 |
| 2 | Power | | | | | 80,000 | |
| | Total | | | | | 80,000 | 0.80 |

| | | | | | | | |
|-----------|--|--|--|--|--|------------------|--------------|
| C2 | Other Fixed Assets | | | | | | |
| 1 | Furniture & Fixtures | | | | | | |
| 2 | Electrical Fittings | | | | | 80,000 | 0.80 |
| | Total | | | | | 80,000 | 0.80 |
| C3 | Pre-operative Expenses | | | | | | |
| 1 | Legal Expenses, Start - up Expenses, Establishment Cost, Consultancy fees, Trials and others | | | | | 1,00,000 | 1.00 |
| 2 | Plastic Tray Capacity | | | | | | |
| 3 | Electrical Fittings | | | | | | |
| | Total | | | | | 1,00,000 | 1.00 |
| C4 | Contingency | | | | | 2,00,000 | 2.00 |
| | Total | | | | | 2,00,000 | 2.00 |
| C | Total Cost (C1+C2+C3+C4) | | | | | 4,60,000 | 4.60 |
| II | Total Cost | | | | | 18,35,000 | 18.35 |

TABLE 7
WORKING CAPITAL REQUIRMENTS

| Sr. No. | Description | Quantity | Unit Rate/ Kg | Total Cost (Rs) /Day | Total Cost (Rs) / Month | Total Cost (Rs) / Year |
|---------|---------------------------------------|----------|---------------|----------------------|-------------------------|------------------------|
| 1 | Coconut With husk | 1500 | 10 | 15,000 | 3.75 | 37.50 |
| 2 | Packaging Material (1 kg) | 375 | 1.5 | 563 | 0.14 | 1.41 |
| 3 | Labour | 10 | 300/day | 3,000 | 0.75 | 7.50 |
| 4 | Supervisor / Manager | 1 | 600/ day | 600.00 | 0.15 | 1.50 |
| 5 | Electricity | | | 360 | 0.09 | 0.90 |
| 6 | Transportation | | | 500 | 0.13 | 1.25 |
| 7 | Miscellaneous | | | 300.00 | 0.08 | 0.75 |
| | Total Cost | | | 20,322.50 | 5.08 | 50.81 |
| | Margin For Working Capital 20% | | | 0.04 | 1.02 | 10 |

TABLE 8 TOTAL PROJECT COST

| Sr. No. | Particulars | Amount In Lakhs |
|----------------|---------------------------------------|------------------------|
| i | Land Development & Building Structure | 3.50 |
| ii | Plant & Machinery | 10.25 |
| iii | Other Fixed Assets | 2.60 |
| iv | Working Capital Margin | 1.02 |
| v | Contingency | 2.00 |
| vi | Total Project Cost | 19.37 |

TABLE 9 MEANS OF FINANCES

| Sr. No. | Particulars | Amount In Lakhs |
|----------------|---------------------------------|------------------------|
| i | Subsidy | 10.00 |
| ii | Promoters Contribution | 3.87 |
| iii | Term Loan | 5.49 |
| | Total Means of Finance (1 to 3) | 19.37 |

TABLE 10 EXPENDITURE, REVENUE AND PROFITABILITY

| PARTICULARS | YEAR | | | | | |
|-----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 1st yr | 2nd yr | 3rd yr | 4th yr | 5th yr | 6th yr |
| Capacity | 0 | 0.6 | 0.7 | 0.8 | 0.9 | 1 |
| A. INCOME | | | | | | |
| Sales of Desiccated coconut | - | 39.77 | 46.86 | 54.09 | 61.46 | 68.97 |
| Total | - | 39.77 | 46.86 | 54.09 | 61.46 | 68.97 |
| B. EXPENSES | | | | | | |
| Raw Material | - | 22.50 | 26.78 | 30.90 | 35.10 | 39.38 |
| Consumables | - | - | - | - | - | - |
| Packing cost | - | 0.84 | 1.00 | 1.16 | 1.32 | 1.48 |
| Transportation cost | - | 0.75 | 0.89 | 1.03 | 1.17 | 1.31 |

| | | | | | | |
|------------------------------|-------------|--------------|--------------|--------------|--------------|--------------|
| Direct employee cost | - | 5.40 | 6.43 | 7.42 | 8.42 | 9.45 |
| Depreciation | - | 2.35 | 2.04 | 1.77 | 1.53 | 1.33 |
| Office Rent | | | | | | |
| Plant Electricity Cost | - | 0.54 | 0.64 | 0.74 | 0.84 | 0.95 |
| Miscellaneous | - | 0.45 | 0.54 | 0.62 | 0.70 | 0.79 |
| Office Expenses | - | 0.66 | 0.73 | 0.80 | 0.88 | 0.97 |
| Telephonic Expenses | - | 0.06 | 0.60 | 0.66 | 0.73 | 0.80 |
| Indirect Employee | - | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Repair & Maintenance | - | 0.50 | 1.50 | 1.65 | 1.82 | 2.00 |
| Audit, Accounts & Compliance | - | 0.44 | 0.44 | 0.48 | 0.53 | 0.59 |
| Insurance | | 0.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Total Cost | - | 35.49 | 43.58 | 49.22 | 55.04 | 61.03 |
| | | | | | | |
| Add :- Opening Stock | | - | 3.46 | 4.09 | 4.72 | 5.36 |
| | | | | | | |
| Less :- Closing Stock | - | 3.46 | 4.09 | 4.72 | 5.36 | 6.02 |
| Cost of Sales | - | 32.03 | 42.95 | 48.59 | 54.40 | 60.37 |
| | | | | | | |
| GROSS PROFIT | - | 7.74 | 3.91 | 5.50 | 7.06 | 8.60 |
| | - | 19.45% | 8.35% | 10.16% | 11.49% | 12.47% |
| FINANCE EXPENSES | | | | | | |
| Interest on Term Loan | 0.58 | 0.53 | 0.45 | 0.37 | 0.28 | 0.20 |
| | | | | | | |
| Interest On CC | | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| Total Interest | 0.58 | 0.61 | 0.53 | 0.44 | 0.36 | 0.28 |

| | | | | | | | |
|-------------------|-----------|------|------|------|------|------|--|
| | | | | | | | |
| PROFIT BEFORE TAX | - 0.58 | 7.13 | 3.39 | 5.05 | 6.70 | 8.32 | |
| INCOME TAX (30%) | - 0.17 | 2.14 | 1.02 | 1.52 | 2.01 | 2.50 | |
| PROFIT AFTER TAX | - 0.40 | 4.99 | 2.37 | 3.54 | 4.69 | 5.82 | |

TABLE 11 REPAYMENT SCHEDULE

| Year | Outstanding loan at start of yr. | Disbursement | Total outstanding Loan | Surplus for repayment | Interest payment | Repayment of principal | Total outgo | o/s Loan at the end of the yr. | Balance left |
|------|----------------------------------|--------------|------------------------|-----------------------|------------------|------------------------|-------------|--------------------------------|--------------|
| 1 | -0.00 | 5.49 | 5.49 | 0.61 | 0.58 | 0 | 0.58 | 5.49 | 0.04 |
| 2 | 5.49 | | 5.49 | 0.59 | 0.53 | 0.78 | 1.32 | 4.71 | -0.73 |
| 3 | 4.71 | | 4.71 | 0.76 | 0.45 | 0.78 | 1.23 | 3.92 | -0.47 |
| 4 | 3.92 | | 3.92 | 1.65 | 0.37 | 0.78 | 1.15 | 3.14 | 0.50 |
| 5 | 3.14 | | 3.14 | 2.65 | 0.28 | 0.78 | 1.07 | 2.35 | 1.58 |
| 6 | 2.35 | | 2.35 | 3.48 | 0.20 | 0.78 | 0.99 | 1.57 | 2.50 |
| 7 | 1.57 | | 1.57 | 3.71 | 0.12 | 0.78 | 0.90 | 0.78 | 2.80 |
| 8 | 0.78 | | 0.78 | 4.69 | 0.04 | 0.78 | 0.82 | - | 3.87 |

TABLE 12 ASSETS DEPRECIATION

| PARTICULARS | YEAR | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 1st yr | 2nd yr | 3rd yr | 4th yr | 5th yr | 6th yr | 7th yr | 8th yr |
| Land & Building Structure | | | | | | | | |
| Opening Bal. | | 3.50 | 3.15 | 2.84 | 2.55 | 2.30 | 2.07 | 1.86 |
| Additions | 3.50 | | | | | | | |
| Less :- Depreciation @ 10% | | 0.35 | 0.32 | 0.28 | 0.26 | 0.23 | 0.21 | 0.19 |
| Closing Bal. | 3.50 | 3.15 | 2.84 | 2.55 | 2.30 | 2.07 | 1.86 | 1.67 |
| PARTICULARS | YEAR | | | | | | | |
| | 1st yr | 2nd yr | 3rd yr | 4th yr | 5th yr | 6th yr | 7th yr | 8th yr |
| Plant & Machinery | | | | | | | | |
| Opening Bal. | | 10.25 | 8.71 | 7.41 | 6.29 | 5.35 | 4.55 | 3.87 |
| Additions | 10.25 | | | | | | | |
| Less :- Depreciation @ 15% | | 1.54 | 1.31 | 1.11 | 0.94 | 0.80 | 0.68 | 0.58 |
| Closing Bal. | 10.25 | 8.71 | 7.41 | 6.29 | 5.35 | 4.55 | 3.87 | 3.29 |
| PARTICULARS | YEAR | | | | | | | |
| | 1st yr | 2nd yr | 3rd yr | 4th yr | 5th yr | 6th yr | 7th yr | 8th yr |
| Other Required Material & Accessories | | | | | | | | |
| Opening Bal. | | 4.60 | 4.14 | 3.73 | 3.35 | 3.02 | 2.72 | 2.44 |
| Additions | 4.60 | | | | | | | |
| Less :- Depreciation @ 10% | | 0.46 | 0.41 | 0.37 | 0.34 | 0.30 | 0.27 | 0.14 |

| | | | | | | | | |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Closing Bal. | 4.60 | 4.14 | 3.73 | 3.35 | 3.02 | 2.72 | 2.44 | 2.30 |
| TOTAL DEPRECIATION | - | | | | | | | |
| PARTICULARS | YEAR | | | | | | | |
| | 1st yr | 2nd yr | 3rd yr | 4th yr | 5th yr | 6th yr | 7th yr | 8th yr |
| Land & Building Structure | - | 0.35 | 0.32 | 0.28 | 0.26 | 0.23 | 0.21 | 0.19 |
| Plant & Machinery | - | 1.54 | 1.31 | 1.11 | 0.94 | 0.80 | 0.68 | 0.58 |
| - | - | | | | | | | |
| Other Required Material & Accessories | - | 0.46 | 0.41 | 0.37 | 0.34 | 0.30 | 0.27 | 0.14 |
| TOTAL DEPRECIATION | - | 2.35 | 2.04 | 1.77 | 1.53 | 1.33 | 1.16 | 0.91 |

TABLE 13 FINANCIAL ASSESSMENT OF PROJECT

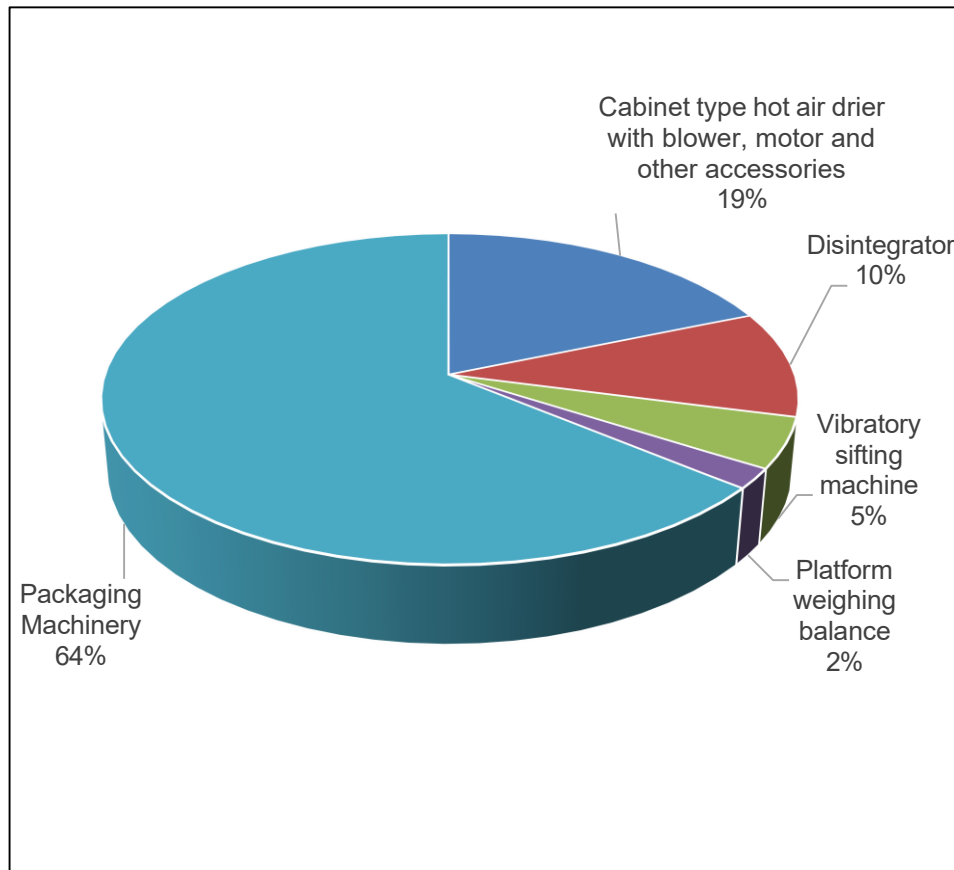
| | YEAR | | | | | | | |
|------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 1st yr | 2nd yr | 3rd yr | 4th yr | 5th yr | 6th yr | 7th yr | 8th yr |
| Cost | 18.35 | 35.49 | 43.58 | 49.22 | 55.04 | 61.03 | 61.79 | 62.01 |
| Benefit | - | 39.77 | 46.86 | 54.09 | 61.46 | 68.97 | 69.66 | 70.36 |
| Discounting Rate | 0.91 | 0.83 | 0.75 | 0.68 | 0.62 | 0.56 | 0.51 | 0.47 |
| P.V Cost | 16.68 | 29.33 | 32.74 | 33.62 | 34.18 | 34.45 | 31.71 | 28.93 |
| P.V Benefit | - | 32.87 | 35.21 | 36.94 | 38.16 | 38.93 | 35.75 | 32.82 |

| | |
|---------------------------|-------------|
| Total P.V Cost | 241.64 |
| Total P.V Benefit | 250.68 |
| Benefit Cost Ratio | 1.04 |

TABLE 14 BREAK EVEN ANALYSIS

| PARTICULARS | Year | | | | | | |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| | 1st yr | 2nd yr | 3rd yr | 4th yr | 5th yr | 6th yr | 7th yr |
| Annual Production in Kg | - | 56,250 | 65,625 | 75,000 | 84,375 | 93,750 | 93,750 |
| Revenue | - | 39.77 | 46.86 | 54.09 | 61.46 | 68.97 | 69.66 |
| Selling Cost Per Kg | - | 70.70 | 71.41 | 72.12 | 72.84 | 73.57 | 74.31 |
| Office & General Expenses | - | 1.16 | 1.77 | 1.94 | 2.14 | 2.35 | 2.59 |
| Depreciation | - | 2.35 | 2.04 | 1.77 | 1.53 | 1.33 | 1.16 |
| Total Fixed Cost | - | 3.51 | 3.80 | 3.71 | 3.67 | 3.68 | 3.75 |
| Total Fixed Cost Per Kg | - | 6.24 | 5.79 | 4.95 | 4.35 | 3.93 | 4.00 |
| Total Variable Cost | - | 29.49 | 35.10 | 40.50 | 46.01 | 51.61 | 51.61 |
| Variable Cost Per Kg | - | 52.43 | 53.48 | 54.01 | 54.53 | 55.06 | 55.06 |
| Contribution | - | 10.28 | 11.76 | 13.59 | 15.45 | 17.36 | 18.05 |
| Contribution per Unit | - | 18.27 | 17.93 | 18.11 | 18.31 | 18.52 | 19.25 |
| Contribution in % | - | 26% | 25% | 25% | 25% | 25% | 26% |
| Break Even Point kg | - | 0 | 0 | 0 | 0 | 0 | 0 |
| Break Even Point Rs | - | 2.77 | 3.05 | 2.96 | 2.92 | 2.94 | 3.01 |
| Break Even In % | - | 34.14 | 32.32 | 27.30 | 23.76 | 21.23 | 20.76 |
| Margin Of Safty | - | 37.00 | 43.81 | 51.13 | 58.54 | 66.04 | 66.66 |

FIGURE 2
PIA CHART FOR BETTER UNDERSTANDING OF EXPENCES OF EACH HEAD

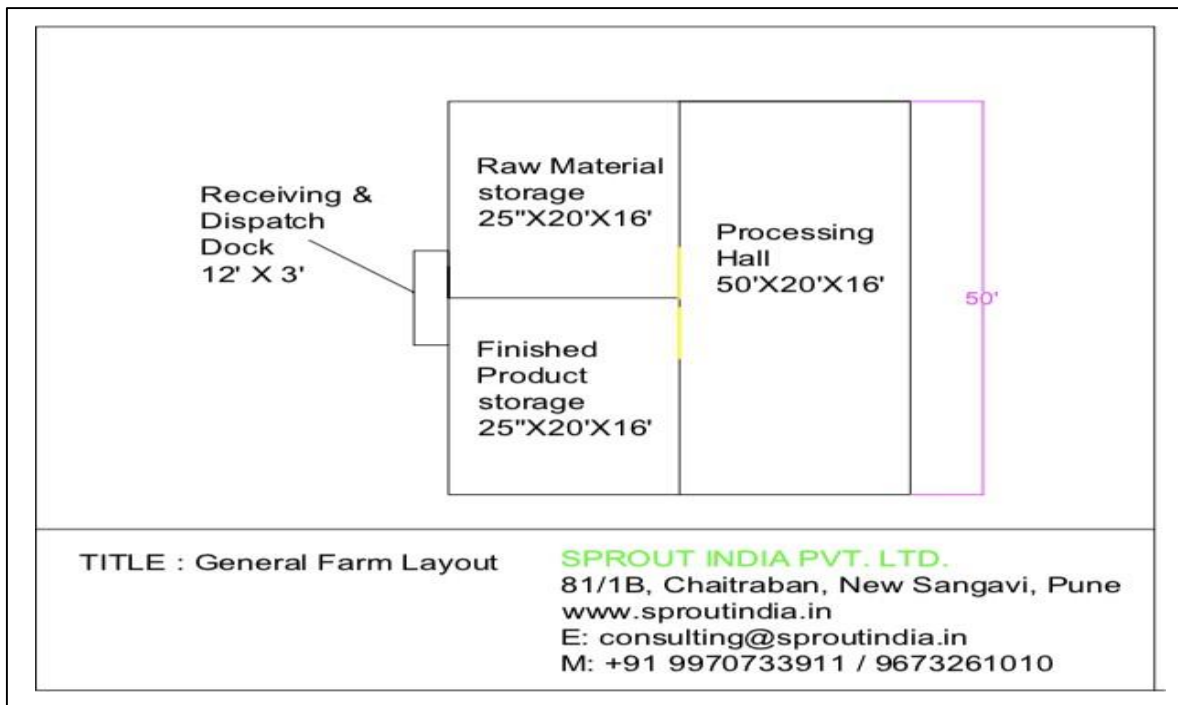


5.1 MACHINERY SUPPLIERS

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

1. Essar Engineers Chinnavedampatti, Coimbatore, Tamil Nadu
2. T & I Global Limited (TIGL). 4-A Auckland Square, 11, Jassal House ,Kolkata
3. ACCUMECHS ENGINEERING TECHNOLOGIES Calicut – 01 Kerala, India.

FIGURE 3
PLANT LAYOUT



6 LIMITATIONS OF MODEL DPR AND GUIDELINES FOR ENTREPRENEURS

6.1 LIMITATIONS OF MODEL DPR

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

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

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

6.2 GUIDELINES FOR ENTEPRENURES

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

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

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

iv. The machineries should be purchased after thorough market research and satisfactory demonstration.

v. The entrepreneur must ensure uninterrupted quality raw materials' supply and maintain optimum inventory levels for smooth operations management.

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

- END OF THE REPORT -



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