PM Formalisation of
Micro Food Processing Enterprises Scheme

DPR OF
PROCESSING OF MEAT SEEKH KABAAB

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CHAPTER 1

OVERVIEW OF MEAT PRODUCTION AND VALUE ADDITION IN INDIA

1.1 INTRODUCTION

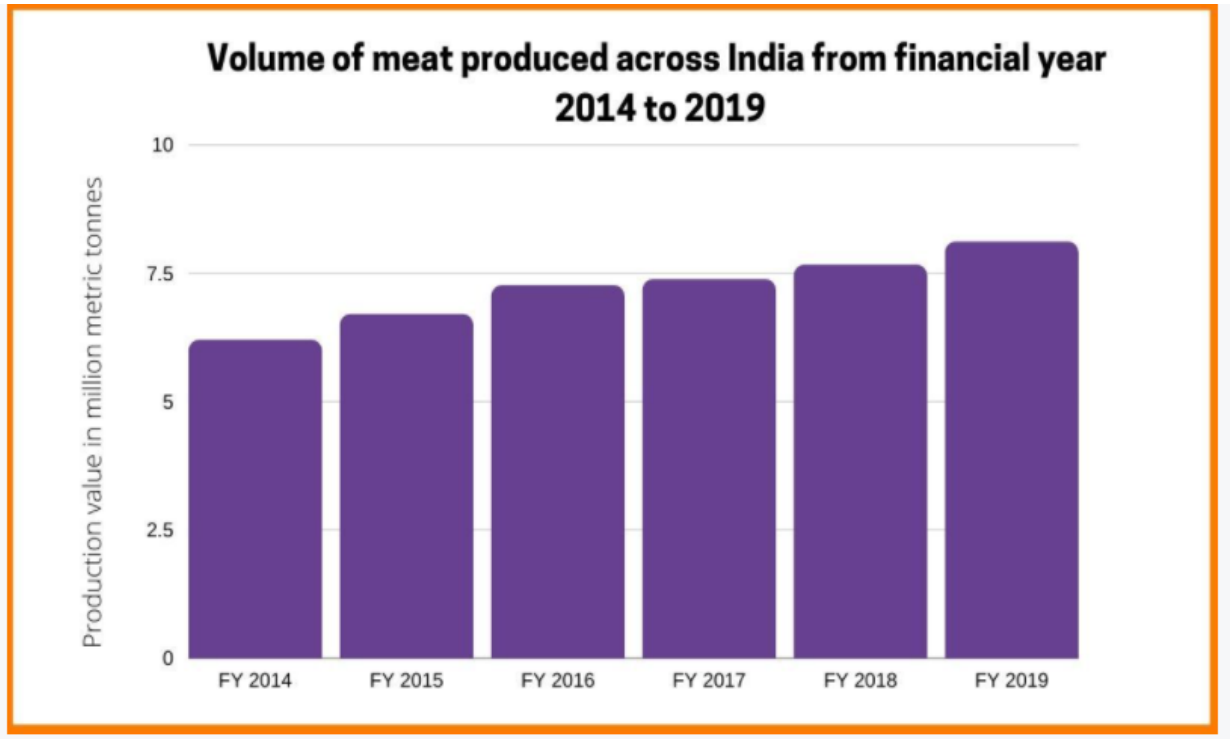
The meat production industry is a vital part of the Indian agricultural setup. According to a research, meat production in India is estimated at 6.3 million tons and is ranked 5th in the world in terms of meat production. India is responsible for 3% of the total meat production in the world by creating around 220 million tons. India has the world's largest population of livestock at about 515 million.

The meat production segment has witnessed a healthy growth rate. It is known for generating reasonable returns for the producers.

In India, beef and pork serve as valuable nutrition-filled consumables and are available at relatively lower prices. The per capita meat consumption in India every year is around 5.2kg. Chicken and fish have the highest consumption rate. Almost 70% of the Indian population is non-vegetarian. The consumption of poultry meat in India was over 3.9 million metric tons in 2020.

The Indian Meat Market

India exports more than more than 7,000 metric tons of poultry meat to other countries. Livestock trading in India is regulated by the state governments. India has the lowest per capita meat consumption in the world. It was just 5.6 kg in 2013, whereas the global average was 33.2 kg in that year. The Indian meat market mostly focuses on fresh meat; frozen meat is mostly exported.



The volume of meat produced from 2016 to 2019 in India.

India has a large resource pool of animal castings and other by-products. The meat industry in India grew substantially during the periods of 2006-2007 and 2012- 2013. India is the second largest producer of buffalo meat in the world. The poultry meat segment is the largest sub-sector in the country's meat industry by owning almost 50% of the total meat production in 2012-13. It is followed by beef/buffalo meat, goat meat, pork meat, sheep meat, and lamb meat.

Uttar Pradesh (UP) is the largest meat producer followed by Andhra Pradesh, West Bengal, Maharashtra, and Tamil Nadu in the specified order. Sustained income and economic growth, a growing urban population, rapidly growing middle class, changing lifestyles, improvement in transportation and storage facilities, and the rise of supermarkets in rural towns are fueling the rapid increase in the consumption of animal-based food products in India.

Some advantages of India for Meat Production

- India is the fastest growing economy in the world.
- It is the largest producer of agricultural commodities.
- It has the second largest consumer market globally.
- India has significant investments in world class ports, logistics, and supply chain infrastructure.
- Proactive government policies.

- Investor-friendly incentives.

Advantages of Starting Meat and Poultry Production in India

- India has the world's largest population of livestock.
- India produces around 5.3 million Metric tons of Meat and 75 billion eggs annually.
- India is the largest producer of buffalo meat and the second largest producer of goat meat.
- The current processing levels in poultry are 6% while it stands at 21% for meat.
- Poultry is a highly integrated industry.
- It is on par with the efficiency levels of many western countries.
- The government of India has taken steps for modernization of municipal slaughter houses to provide safe and hygienic meat to consumers.
- Export-oriented units have invested significantly in the establishment of large slaughter houses-cum-meat processing plants laden with the latest technology.
- Farm automation, slaughter houses, logistics, and point of sale cold storage infrastructures are amazing growth avenues in India given the changing preference of Indian consumers for clean, safe, and hygienic meat products.
- There are about 27 modern meat processing plants approved after due inspection for export of meat. All export-oriented units (EOU) are registered with the Agricultural and Processed Food Products Export Development Authority (APEDA) of India.

1.2 ORIGIN DISTRIBUTION AND MEAT PRODUCTION

India is having a good potential for meat production because of large livestock population. In India, the largest meat producer species is poultry followed by bovines, goat and sheep. Production of meat is largely an unorganized activity in India. The lack of appropriate slaughtering facilities leading to unnecessary losses of meat as well as valuable by-products.

The major constraints in hygienic meat production are lack of hygienic facilities in slaughter houses, poor transport and cold storage facilities, ignorance about hygiene at butcher level and religious taboo. The global demand for livestock products is an opportunity for India to increase its exports. Meat

exported from India is risk-free, lean, nutritious and competitively priced meat. It has resulted in consistent, high compound growth rate in the export volumes.

The importers of Indian meat are Vietnam, Malaysia, Thailand, Australia, UAE, Saudi Arabia and Egypt. Uttar Pradesh state has emerged as the major exporter of buffalo meat followed by Punjab and Maharashtra. The value addition to slaughterhouse by products generate additional income as well as the costs of disposing of by products can be minimised. Measures should be taken to increase the meat production efficiency of different species of animals using the improved management practices. There is huge potential in this sector for economic development of country through increasing exports so the policy makers should adopt critical measures at every stage to encourage and support this vital segment of the Indian agriculture.

Among agriculture produce, meat occupies a significant place as about 70- 80% of Indian population is non-vegetarian. The growth of livestock sector was much faster than crop between 1981 and 2006, livestock sector grew at rate of 3.9% annually while crop sector grew by 2.8%. Meat is a valuable commodity and an important source of protein. The meat availability in India is only about 15g/person/day against the ICMR recommendation of 30g/person/day. The traditions and culture influence meat consumption to a great extent in India. The animal protein foods are at the top of the food chain. Meat is considered as an integral component of human diet, which is a rich source of valuable proteins, vitamins, minerals, micronutrients and fats. Meat supplies omega 3 fatty acid and conjugated linoleic acid which provides valuable nutrients. The bio-availability of muscle food proteins is high with (Net protein utilization value around 0.75 as against 0.5-0.6 for plant proteins) balanced amino acid profile having higher digestibility.

1.3 VARIETIES

Livestock sector is an important sub-sector of the agriculture of Indian economy. It forms an important livelihood activity for most of the farmers, supporting agriculture in the form of critical inputs, contributing to the health and nutrition of the household, supplementing incomes, offering employment opportunities. It acts as a supplementary and complementary enterprise. India has vast resource of livestock and poultry, which pay a vital role in improving the socio-economic conditions of rural masses. There are about 300.00 million bovines, 65.07 million sheep, 135.2 million goats, about 10.3 million pigs and 729.2 million poultry as per 19th Livestock Census in the country.

Livestock resources of India

- World's highest livestock owner at about 535.78 million
- First in the total buffalo population in the world - 109.85 million buffaloes
- Second in the population of goats - 148.88 million goats
- Second largest poultry market in the world
- Second largest producer of fish and also second largest aquaculture nation in the world
- Third in the population of sheep (74.26 millions)
- Fifth in in the population of ducks and chicken (851.81 million)
- Tenth in camel population in the world - 2.5 lakhs

Source : 20th Livestock Census

Production of livestock in India 2017-18

Sl. No.	Product	Quantity	Ranking in the world production
01	MILK in million tonnes	**176.30**	FIRST
02	EGGS in millions Nos.	**95,217**	THIRD
03	MEAT million tonnes	**7.70**	NA
04	WOOL in million kgs.	**41.50**	NA
05	FISH in million metric tonnes	**12.61**	SECOND

1.4 HEALTH BENEFITS OF MEAT

Beef is a rich source of high-quality protein and various vitamins and minerals. As such, it can be an excellent component of a healthy diet.

Maintaining muscle mass

Like all types of meat, beef is an excellent source of high-quality protein.

It contains all of the essential amino acids and is referred to as a complete protein.

Many people — especially older adults — don't consume enough high-quality protein.

Inadequate protein intake may accelerate age-related muscle wasting, increasing your risk of an adverse

condition known as sarcopenia.

Sarcopenia is a serious health issue among older adults but can be prevented or reversed with strength exercises and increased protein intake.

The best dietary sources of protein are animal-derived foods, such as meat, fish, and milk products.

In the context of a healthy lifestyle, regular consumption of beef — or other sources of high-quality protein — may help preserve muscle mass, reducing your risk of sarcopenia.

Improved exercise performance

Carnosine is a compound important for muscle function.

It's formed in your body from beta-alanine, a dietary amino acid found in high amounts in fish and meat — including beef.

Supplementing with high doses of beta-alanine for 4–10 weeks has been shown to lead to a 40–80% increase in carnosine levels in muscles.

In contrast, following a strict vegetarian diet may lead to lower levels of carnosine in muscles over time.

In human muscles, high levels of carnosine have been linked to reduced fatigue and improved performance during exercise.

Additionally, controlled studies suggest that beta-alanine supplements can improve running time and strength.

Anemia prevention

Anemia is a common condition, characterized by a decreased number of red blood cells and reduced ability of the blood to carry oxygen.

Iron deficiency is one of the most common causes of anemia. The main symptoms are tiredness and weakness.

Beef is a rich source of iron — mainly in the form of heme iron.

Only found in animal-derived foods, heme iron is often very low in vegetarian — and especially vegan — diets.

Your body absorbs heme iron much more efficiently than non-heme iron — the type of iron in plant-derived foods.

Thus, meat not only contains a highly bioavailable form of iron but also improves the absorption of non-heme iron from plant foods — a mechanism that has not been fully explained and is referred to as the "meat factor."

A few studies indicate that meat can increase the absorption of non-heme iron even in meals that contain phytic acid, an inhibitor of iron absorption

Nutritional Content

Beef is primarily composed of protein and varying amounts of fat.

Here are the nutrition facts for a 3.5-ounce (100-gram) serving of broiled, ground beef with 10% fat content.

- Calories: 217
- Water: 61%
- Protein: 26.1 grams
- Carbs: 0 grams
- Sugar: 0 grams
- Fiber: 0 grams
- Fat: 11.8 grams

Protein

Meat — such as beef — is mainly composed of protein.

The protein content of lean, cooked beef is about 26–27%.

Animal protein is usually of high quality, containing all nine essential amino acids needed for the growth and maintenance of your body.

As the building blocks of proteins, amino acids are very important from a health perspective. Their composition in proteins varies widely, depending on the dietary source.

Meat is one of the most complete dietary sources of protein, its amino acid profile being almost identical to that of your own muscles.

For this reason, eating meat — or other sources of animal protein — may be of particular benefit after

surgery and for recovering athletes. In combination with strength exercise, it also helps maintain and build muscle mass.

Fat

Beef contains varying amounts of fat — also called beef tallow.

Apart from adding flavor, fat increases the calorie content of meat considerably.

The amount of fat in beef depends on the level of trimming and the animal's age, breed, gender, and feed.

Processed meat products, such as sausages and salami, tend to be high in fat.

Lean meat is generally about 5–10% fat.

Beef is mainly composed of saturated and monounsaturated fat, present in approximately equal amounts.

The major fatty acids are stearic acid, oleic acid, and palmitic acid.

Food products from ruminant animals — such as cows and sheep — also harbor trans fats known as ruminant trans fats.

The most common is conjugated linoleic acid (CLA), which is found in beef, lamb, and dairy products. CLA has been linked to various health benefits — including weight loss. Still, large doses in supplements may have harmful metabolic consequences.

Vitamins and minerals

The following vitamins and minerals are abundant in beef:

Vitamin B12:

Animal-derived foods, such as meat, are the only good dietary sources of vitamin B12, an essential nutrient that is important for blood formation and your brain and nervous system.

Zinc: Beef is very rich in zinc, a mineral that is important for body growth and maintenance.

Selenium: Meat is generally a rich source of selenium, an essential trace element that serves a variety of functions in your body.

Iron: Found in high amounts in beef, meat iron is mostly in the heme form, which is absorbed very efficiently.

Niacin: One of the B vitamins, niacin (vitamin B3) has various important functions in your body. Low niacin intake has been associated with an increased risk of heart disease.

Vitamin B6:

A family of B vitamins, vitamin B6 is important for blood formation and energy metabolism.

Phosphorus. Widely found in foods, phosphorus intake is generally high in the Western diet. It's essential for body growth and maintenance.

Beef contains many other vitamins and minerals in lower amounts.

1.5 PROCESSING AND VALUE ADDITION IN INDIA

There is very little processing, hardly 1% of the total meat produced in the country and remaining meat sold in fresh or frozen form.

Pork and Poultry meat are used for production of ham, sausages, patties etc., for the elite market. The meat processors like Venky, Alchemist foods, Darshan foods, Government Bacon Factories etc, produce these products.

Meat from small ruminants, namely, sheep and goat is also used for production of traditional Kebabs (Seekh and Shami Kebab).

Buffalo meat is basically used in the household for preparation of curries and Kebabs. It is also mixed with vegetables like potatoes, cabbages, turnips, sugar beet to make delicious dishes, to name a few, besides the irresistible Biryani, which is a mix of meat and rice.

Buffalo steaks are also a delicious product. Both Seekh and Shami Kebabs are delicacies prepared from buffalo meat only, which is liked by all classes of people in India. The buffalo meat has a great water holding and binding properties, and is, therefore, used for industrial purposes in the production of sausages, patties, nuggets, corn beef, ham etc.

While India has an abundant supply of meat, the meat processing industry is yet to catch up. Meat processing covers a spectrum of products. It includes animal husbandry and poultry farm produce, bulk frozen meat, chilled and deli meat, packaged meat, and ready-to-eat processed meat products.

There is a huge scope for meat processing in poultry as well as in red meat. In fact, the poultry industry has made considerable progress by developing and marketing value-added products. The meat industry is slowly yet steadily catching pace on the global front with India now

exporting both frozen and fresh chilled meat to more than 60 countries.

The major item of export is de-boned frozen buffalo meat which accounts for 97 per cent of the total meat export. The major markets for Indian buffalo meat are Malaysia and Egypt while for sheep meat and goat meat, the markets are UAE, Iran, and Jordan. India also exports a small quantity of processed meat to Thailand, Yemen, and Japan and some poultry products to Saudi Arabia, Oman, Kuwait, and Qatar.

Food Safety and Standards Act, 2006 regulates and ensures the processed meat sector to produce safe and quality products in order to meet the requirements of International trade and make the Indian food and meat industry competitive in the global market. In fact, in spite of big potential because of large livestock population, the meat industry in India has not taken its due share. There are many constraints for the slow growth of the Indian meat industry, including lack of scientific approach to rearing of meat animals, unorganized nature of meat production and marketing, socio-economic taboo and inadequate infrastructure facilities and poor harvest management. During the last three to four decades, India has witnessed the green, white, yellow and blue revolutions and now the time has come to realize one more revolution i.e. red revolution in the form of meat production.

Meat processing and value addition are key for the prosperity of meat industry. The awareness regarding the processed meats and the convenience to the consumers and households should be improved. Production of good quality animals for slaughter is must for production of good quality meat. Hence, farmers' cooperative can play a major role in the field of production and marketing of quality animals, extension education and encouragement of backward integration / contract farming as in poultry industry for intensive and semi-intensive system of rearing small ruminants.

Most of meat is sold in India is in unpacked form. Meat is packed only in some organized meat factories and in bacon factories. For safe delivery of the meat and various value-added meat products through the various stages of processing, storage, transport, distribution and marketing packaging is of utmost importance.

CHAPTER 2

MODEL MEAT SEEKH KABAAB MANUFACTURING UNDER FME SCHEME

2.1 LOCATION OF THE PROPOSED PROJECT AND LAND

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

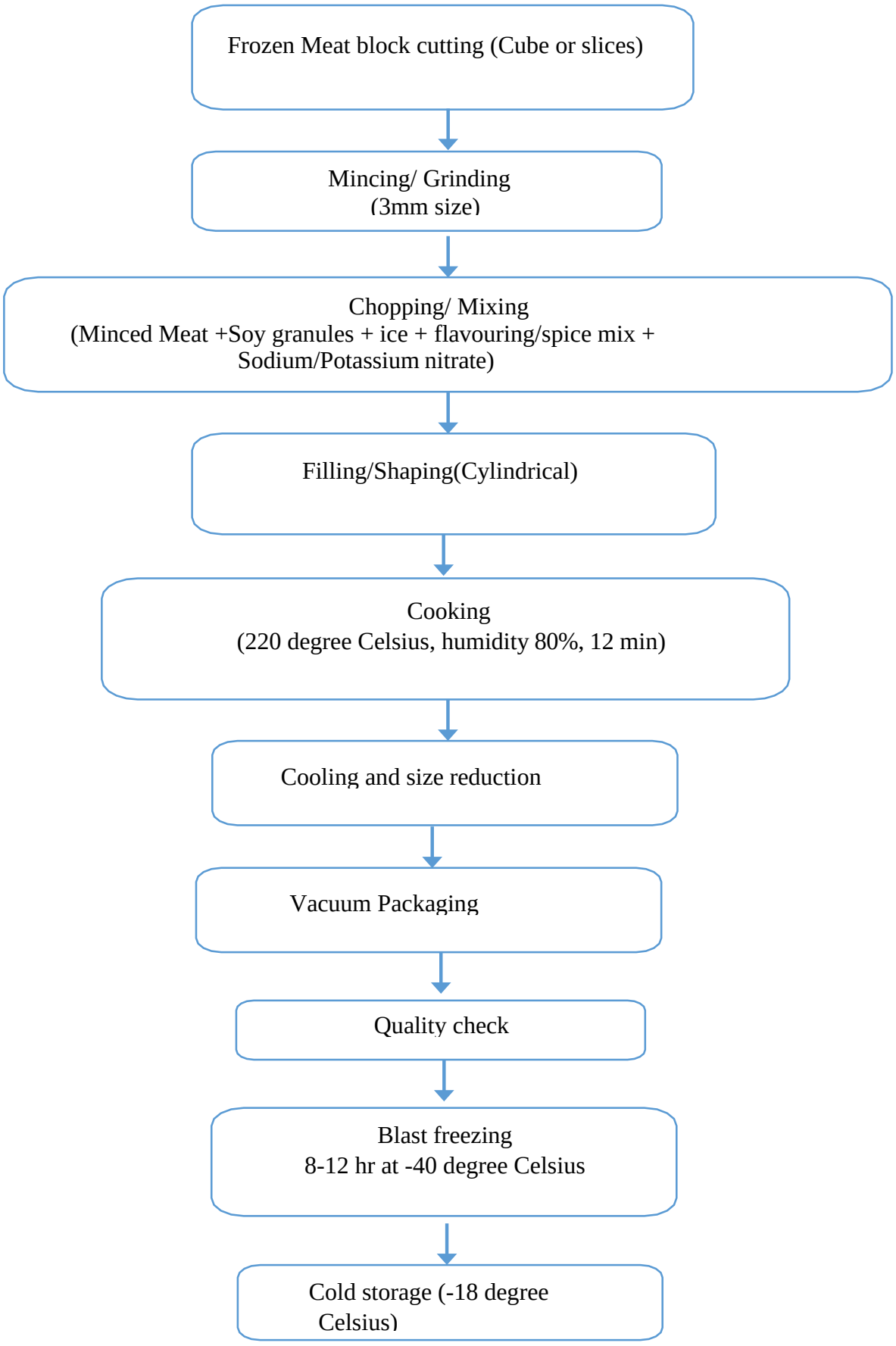
2.2 INSTALLED CAPACITY OF THE MEAT SEEKH KABAABS MANUFACTURING UNIT

The maximum installed capacity of the MEAT SEEKH KABAAB manufacturing unit in the present model project is proposed as 150 tons/annum or 500 kg/day MEAT SEEKH KABAABs. The unit is assumed to operate 300 days/annum @ 8-10 hours/day the 1styear is assumed to be construction/expansion period of the project; and in the 2nd year 55 percent capacity, 3rd year 65 percent capacity, 4th year 75 percent capacity, 5th year 90 percent capacity & 6th year onwards 100 percent capacity utilization is assumed in this model project.

2.3 RAW MATERIAL REQUIREMENTS FOR THE UNIT

A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 280-300 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory. The processor must have linkage with producer organizations preferably FPCs through legal contract to get adequate quantity and quality of raw materials which otherwise get spoiled. In the MEAT SEEKH KABAAB manufacturing project, the unit requires 504.2 kg/day, 595.8 kg/day, 687.5 kg/day, 825 Kg/day & 916.7 kg/day raw meat at 55, 65, 75, 90 & 100 percent capacity utilization, respectively.

2.4 MANUFACTURING PROCESS OF THE MEAT SEEKH KABAAB



INGREDIENTS USED

- **Frozen meat (Chicken/ Beef/Mutton)**
- **Soy granules/flakes-** These are known as Meat extenders and they are primarily plant proteins from legumes, with soybeans as the major source. Textured Vegetable Protein is the most common soy bean extender. It is used to increase the volume of the product.
- **Ice-** Dry Ice will keep the temperature cold and reduce spoilage while processing meat. This is used in industrial processing of ground meats and sausages.
- **Flavouring/ Spices mix-** Seasonings are normally parts of plants which flavour food. Natural spices, herbs and vegetable bulbs are the main groups of seasonings used.
- **Phosphate salt** - Phosphate salts are used for improving the water holding capacity (to improve water retention) of meat, stabilizing the texture, emulsification of fat, slowing down oxidation reactions, reduce shrinkage (moisture loss) during cooking and to enhance flavour, colour and appearance.

PROCESSING

Frozen Meat Block Cutting

Meat (along with Chicken skin) is generally frozen at -18 to -12 degree Celsius before cutting into small blocks. Cutting boneless meat which is frozen and without thawing is generally done to avoid nutrition losses, saves flavour and cause minimum wastage and spill. For this purpose, Frozen meat cutter or saw band is used. Cutting through saw band not only preserve meat's freshness but also it does not damage the muscle fibres.

Mincing

It refers to a technique in which meat is crushed into very small pieces. This approach is popular especially when it comes to preparing meat for processing into different products such as meat patty, kebabs etc. For seekh kebab, the meat is minced to the size of 3mm.

Chopping and Mixing of Ingredients

After mincing, chopping or emulsifying of all the ingredients are done in order make a mixture of uniform consistency. This step basically shreds all the ingredients which are to be used in the kebab mixture. For this, a buffalo chopper, also known as a bowl chopper or food cutter, which

is a machine that chops or emulsifies food by rotating it in a bowl under spinning blades. Because buffalo choppers' bowls are shallow, they help to promote even cutting and prevent the ingredients from piling up during rotation.

Shaping/Filling

Seekh kebabs are long cylindrical in shape. This shape gives seekh kebab its peculiar name as traditionally it was shaped and cooked on iron rod/ skewers on charcoal fire. To imitate the same shape and size in small- and large-scale industries, Hydraulic filling machine is used which ease up the shaping process.

Cooking/Roasting

Roasting is a cooking process that involves applying dry heat indirectly. Roasting meat is typically done at a high temperature for a short period of time, which is used to caramelize the outside of the meat, tenderizing the meat through. Seekh kebabs are roasted at temperature 220 degree celsius, with humidity 80% for 12 minutes to get desirable colour and softness. For this step, Combi oven is used which uses the combination function of both steam and convection to work together to produce kebabs that are moist, flavourful, and have minimal shrinkage.
After cooking process, the long seekh kebabs are cut into smaller sizes according to packaging requirement to make weighing conveinient.

Vacuum Packaging

It is a method of preserving foods by preventing contact with oxygen - which is required by pathogenic and food spoilage microorganisms in order for them to live and multiply. Vacuum packing sucks air out of food packaging so that there is no air around the food. It is especially suited for packaging of Seekh kebabs. Vacuum packing can be achieved with the use of a commercially available vacuum sealer.

Blast Freezing

During freezing, the longer the freezing process takes, the larger the ice crystals. Larger ice crystals damage materials by causing phenomena like cell bursting, which affects quality and flavour of foods. Therefore, blast freezing is used which causes the crystals formed to be very small and it does less damage and preserves food at a higher quality. Blast freezing of Seekh kebabs is done for 8-12 hr at -40 degree Celsius.

Cold Storage

After blast freezing, the packets are wrapped into tertiary packs and then are shifted to cold store which is at -18 degree Celsius till further delivery to the clients.

The main purpose of packaging is to prevent meat and meat products from microbial contamination, physical and chemical changes. Packaging materials for sausages whether primary or secondary should be good enough to offer an acceptable visual and structural presentation of the product to the customer.

EQUIPMENTS AND MACHINERY USED

1. **Meat Band Saw**

2. **Meat Mincer with plates**

3. **Bowl Chopper**

4. **Combi Oven**

5. **Filler Machine**

6. Vacuum Packaging Machine

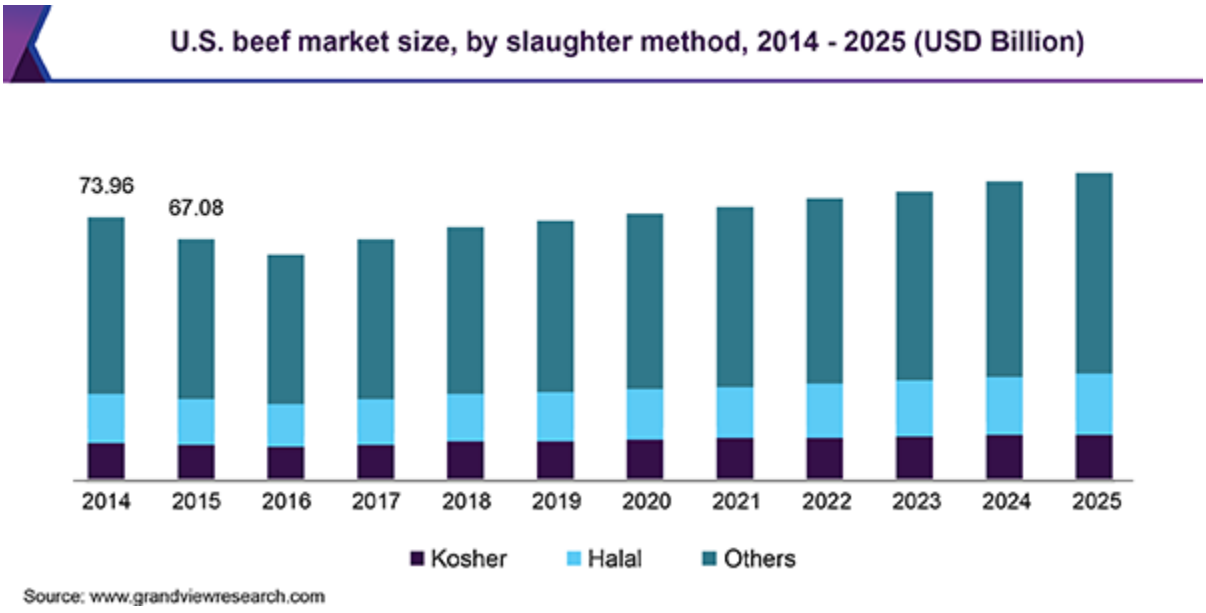
7. Metal Detecting Machine

8. Blast Freezer

9. Cold Storage

2.5 MARKET DEMAND AND SUPPLY FOR MEAT SEEKH KABAABS

The global beef market size was estimated at USD 300.6 billion in 2017 and is projected to exhibit a CAGR of 3.1% between 2017 and 2025. Rise in population and consumer disposable income, along with beef emerging as a key source of protein, are major factors driving the market. Beef is one of the most consumed meat forms in the world and is only second to pork in terms of volume consumption. There is a significant supply-demand gap in the market due to the limited production of this meat owing to various environmental and political factors.



Source: www.grandviewresearch.com

Beef and veal (meat from calves) have the highest protein content compared to other meat forms and this is expected to increase their demand as a key source of protein. Veal has the highest protein content of 33.9% per 100 gm of cooked meat, which is higher than any other form of meat. Pork, on the other hand, has a protein content of 29.3% while chicken has 28.9% per 100 gm. China is a prominent market, driven by increasing demand for the meat, supported by rising disposable income. China has witnessed double-digit growth in disposable income and it is expected to maintain the same trend over the coming years. Improving the living standards of the

people in the country has resulted in a shift in meat preferences, with most choosing beef-based products rather than products derived from pork and chicken.

Rising urbanization, growing global population, and the need to feed them are some of the key factors expected to contribute to market growth. The rapid and recent spread of diseases in the pork and poultry markets have resulted in consumers turning to beef and associated products. Besides, increasing demand for special cuts of meat, including kosher and halal beef, is anticipated to fuel the market.

Higher prices of beef in comparison to other forms is expected to negatively impact the market. In 2016, beef prices were more than 61.0% higher than other protein sources such as pork and poultry, resulting in decreased demand, primarily in economically affected countries. Also, an imbalance in the supply of cattle may result in an increase in cattle prices over the coming years.

Some key players operating in the beef market include Tyson Foods, Inc.; Danish Crown; Cargill, Incorporated; Marfrig Global Foods S.A.; NH Foods Ltd.; NH Foods Ltd.; St Helen's Meat Packers; Hormel Foods Corporation; JBS USA; National Beef Packing Company, LLC; Vion Food Group; and Australian Agricultural Company Limited.

Halal certified beef dominated the beef market with a share of 18.8% in 2019. This is attributed to the Increasing Islamic population around the globe since Islam prohibits the consumption of pork, beef has emerged as one of the most preferred forms of meat in these countries.

2.6 MARKETING STRATEGY FOR MEAT SEEKH KABAAB

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

To meet the growing demand, the poultry population in the country has grown at a rapid pace. In 2003, the poultry and livestock population in India were almost the same but the poultry sector has grown a lot more comparatively ever since. In 2019, the population of poultry in India was over 800 million. This was a 16 percent increase over the last five years. In 2019, the Indian state of Tamil Nadu had the largest population of poultry in India accounting for more than 100 million.

Poultry trade in India

According to the source, India exported more than 7,000 metric tons of poultry meat to other countries. Even though the volume was high, it was less than the volume exported in 2016. For the same period, import of poultry meat was low but followed an increasing trend.

The consumption patterns in India are mostly driven by socio-economic conditions and religious beliefs. According to a recent study, while meat consumption is on the rise in the country, there are social stigmas attached to it. These social stigmas have thereby given rise to discrepancies in meat consumption patterns in public and private spaces.

The study points out how private meat consumption in India happens in a variety of different ways. Places outside the home like restaurants, food courts, offices, or segregated ‘safe’ spaces like lawns, separate kitchens, and dining spaces for non-vegetarian family members at home are backstage settings for eating meat in India.

However, getting an accurate estimate of meat consumption in India is a struggle. Various research notes that Indians are particularly likely to underreport their consumption of meat due to cultural restrictions and taboos associated with eating it.

2.7 DETAILED PROJECT ASSUMPTIONS

This model DPR for MEAT SEEKH KABAAB 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 processing unit by adding some required equipments as per need of the project. Therefore, land and civil infrastructures are assumed as already available with the entrepreneurs.

- Herewith in this DPR, we have considered the assumptions as listed below in the tables of different costs, which may vary as per region, seasons and machinery designs and supplier.
    1. Raw meat cost considered @ Rs. 170/-per kg.
    2. 1 kg meat will produce 60% recovery.
    3. 1 Batch size is approximately 500 kg.
    4. No. of hours per day are approximately 8-10 hours.
    5. Batch yield is 95%.

Detailed Project Assumptions			
Parameter	Assumption		
Capacity of the meat sheek kabaab	150	MT/annum	
Utilization of capacity	1st Year Implementation, 55% in second, 65% in third, 75% in fourth year, 90% in fifth & onwards		
Working days per year	300	days	
Working hours per day	10	hours	

Interest on term and working capital loan	12%		
Repayment period	Seven year with one year grace period is considered.		
Average prices of raw material	170		
Average sale prices per Kg	700	Rs/kg	
extraction	0.11		
Meat Seekh kabaab	1 kg seekh kabaab from 1.83 kg meat		

2.8 FIXED CAPITAL INVESTMENT

2.8.1 MACHINERY AND EQUIPMENT

Machinery and Equipment				
Sr. No	Equipment	Quantity	Capacity	Amount (in Lakhs)
1	Cold Room	1	10000 kg capacity	6
2	Meat band Saw	1	100 kg per Hour	0.85
3	Meat Mincer	1	100 kg per Hour	0.8
4	Bowl Chopper		100 kg per hour	0.6
5	Combi oven	1	100 kg/hour	2.25
6	Meat filling Machine	1	100 kg/hr	1.2
7	Industrial Meat Smoking Machine	1	Suitable	0.35
8	Vacuum Packaging Machine	1	Suitable	0.9
9	Metal Detector Machine	1	Suitable	4.5
10	Blast freezer	1	Suitable	4
11	Accessories	1	Suitable	1.2
				22.65

2.8.2 OTHER COSTS:-

Utilities and Fittings:-

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

Other Fixed Assests:

Other Fixed Assets

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

Pre-operative expenses

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

Contingency cost to be added as approx.1.2 Lac.

So total startup cost at own land & Premise may be somewhat similar to 52.33 lacs. This is according to survey done at X location India. This may vary on location, situation and design change over.

2.9 WORKING CAPITAL REQUIREMENTS

Working Capital Requirement (Rs. in Lakh)				
		55%	65%	75%
Particulars	Period (days)	Year 2	Year 3	Year 4
Raw material stock	5	9.16	10.83	14.77
Work in progress	10	18.33	21.66	29.54
Packing material	10	0.35	0.41	0.56
Finished goods' stock	10	19.05	22.52	30.70
Receivables	20	38.10	45.03	61.41
Working expenses	14	0.52	0.62	0.84
Total current assets		85.52	101.07	137.83
Trade creditors		0.00	0.00	0.00
Working capital gap		85.52	101.07	137.83
Margin money (25%)		21.38	25.27	34.46
Bank finance		64.14	75.81	103.37

2.10 TOTAL PROJECT COST AND MEANS OF FINANCES

Particulars	Amount in Lakhs
i. Land and building (47 x 28 x 12 ft - LxBxH)	4.5
ii. Plant and machinery	22.65
iii. Utilities & Fittings	0.8
iv. Other Fixed assets	0.9
v. Pre-operative expenses	0.90
vi. Contingencies	1.20
vii. Working capital margin	21.38
Total project cost (i to vii)	52.33
Means Of finance	
i. Subsidy	10.00
ii. Promoters Contribution	10.88
iii. Term Loan (@10%)	31.40

2.11 MANPOWER REQUIREMENTS

Manpower Requirement				
Total Monthly Salary (Rs.)	No	Wages	Total Monthly	Annual Amount
Supervisor (can be the owner)	1	15000	15000	180000
Technician	1	12000	12000	144000
Helper	2	5500	11000	132000
Sales man	1	7000	7000	84000
		Total	**45000**	**540000**

2.12 EXPENDITURE, REVENUE AND PROFITABILITY ANALYSIS

Expenditure, Revenue and Profitability Analysis							
		150	MT				
	275						
	Particulars	**1st Year**	**2nd Year**	**3rd Year**	**4 th Year**	**5th year**	**6th year**
A	Total Installed Capacity (MT)	150 MT Cardamom /Annum	82.5	97.5	112.5	135	150
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%
B	**Expenditure (Rs. in Lakh)**	0					
	Raw Meat (Av. Price @ Rs. 170/Kg)	0.00	287.29	339.53	391.76	470.11	522.35
	Packaging materials	0.00	5.78	6.83	7.88	9.45	10.50
	Utilities (Electricity, Fuel)	0.00	3.22	3.81	4.40	5.28	5.86
	Salaries (1st yr only manager's salary)	1.80	5.40	5.40	5.40	5.40	5.40
	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90
	Insurance	0.30	0.30	0.30	0.30	0.30	0.30
	Miscellaneous expenses	0.50	2.30	2.30	2.30	2.30	2.30
	Total Expenditure	**2.60**	**304.99**	**358.96**	**412.93**	**493.74**	**547.61**
C	**Total Sales Revenue (Rs. in Lakh)**	**0.00**	**577.50**	**682.50**	**787.50**	**945.00**	**1050.00**
	Sale of Meat Sheek Kabaab (Av. Sale Price @ Rs. 700/kg)	0.00	577.50	682.50	787.50	945.00	1050.00
D	**PBDIT (Total exp.-Total sales rev.) (Rs. in Lakh)/Cash Inflows**	**-2.60**	**272.51**	**323.54**	**374.57**	**451.26**	**502.39**
	Depreciation on civil works @ 5% per annum	0.23	0.21	0.20	0.19	0.18	0.17
	Depreciation on machinery @ 10% per annum	2.27	2.04	1.83	1.65	1.49	1.34
	Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05
	Interest on term loan @ 12%	2.56	2.47	2.37	2.26	2.14	2.01
	Interest on working capital @ 12%	0.00	7.70	9.10	12.40	12.40	12.40
E	Profit after depreciation and Interest (Rs. in Lakh)	**-7.77**	**267.69**	**319.04**	**370.39**	**447.39**	**498.81**
F	Tax (assumed 30%) (Rs. in Lakh)	**0.00**	**80.31**	**95.71**	**111.12**	**134.22**	**149.64**
G	Profit after depreciation, Interest & Tax (Rs. in Lakh)	**-7.77**	**187.38**	**223.33**	**259.27**	**313.17**	**349.17**
H	Surplus available for repayment (PBDIT-Interest on working capital-Tax) (Rs. in Lakh)	2.56	2.47	2.37	2.26	2.14	2.01

I	Coverage available (Rs. in Lakh)	2.56	2.47	2.37	2.26	2.14	2.01
J	Total Debt Outgo (Rs. in Lakh)	0.85	0.94	1.04	1.15	1.27	1.40
K	Debt Service Coverage Ratio (DSCR)	3.00	2.62	2.28	1.97	1.69	1.44
	Average DSCR	2.16					
L	Cash accruals (PBDIT- Interest-Tax) (Rs. in Lakh)	-5.16	189.73	225.45	261.19	314.90	350.73
M	Payback Period	2.0 Years					
	(on Rs. 52.33 Lakhs initial investment)						

2.13 REPAYMENT SCHEDULE

Year	Beginning	PMT	Interest	Principal	Ending Balance
1	24,59,553.81	3,41,187.30	2,55,793.60	85,393.70	23,74,160.12
2	23,74,160.12	3,41,187.30	2,46,912.65	94,274.64	22,79,885.47
3	22,79,885.47	3,41,187.30	2,37,108.09	1,04,079.21	21,75,806.27
4	21,75,806.27	3,41,187.30	2,26,283.85	1,14,903.44	20,60,902.82
5	20,60,902.82	3,41,187.30	2,14,333.89	1,26,853.40	19,34,049.42
6	19,34,049.42	3,41,187.30	2,01,141.14	1,40,046.16	17,94,003.27
7	17,94,003.27	3,41,187.30	1,86,576.34	1,54,610.96	16,39,392.31
8	16,39,392.31	3,41,187.30	1,70,496.80	1,70,690.49	14,68,701.82
9	14,68,701.82	3,41,187.30	1,52,744.99	1,88,442.31	12,80,259.51
10	12,80,259.51	3,41,187.30	1,33,146.99	2,08,040.31	10,72,219.20
11	10,72,219.20	3,41,187.30	1,11,510.80	2,29,676.50	8,42,542.71
12	8,42,542.71	3,41,187.30	87,624.44	2,53,562.85	5,88,979.85
13	5,88,979.85	3,41,187.30	61,253.90	2,79,933.39	3,09,046.46
14	3,09,046.46	3,41,187.30	32,140.83	3,09,046.46	(0.00)
		47,76,622.13	23,17,068.32	24,59,553.81	(24,59,553.81)

2.14 ASSET'S DEPRECIATION

Assets' Depreciation (Down Value Method)							Amounts in Lakhs	
Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year
Civil works	4.50	4.28	4.06	3.86	3.67	3.48	3.31	3.14
Depreciation	0.23	0.21	0.20	0.19	0.18	0.17	0.17	0.16
Depreciated value	4.28	4.06	3.86	3.67	3.48	3.31	3.14	2.99

Plant & Machinery	22.65	20.39	18.35	16.51	14.86	13.37	12.04	10.83
Depreciation	2.27	2.04	1.83	1.65	1.49	1.34	1.20	1.08
Depreciated value	20.39	18.35	16.51	14.86	13.37	12.04	10.83	9.75
Other Fixed Assets	0.80	0.68	0.58	0.49	0.42	0.35	0.30	0.26
Depreciation	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
Depreciated value	0.68	0.58	0.49	0.42	0.35	0.30	0.26	0.22
All Assets	27.95	25.34	22.99	20.86	18.94	17.21	15.65	14.23
Depreciation	2.61	2.35	2.12	1.92	1.73	1.56	1.41	1.28
Depreciated value	25.34	22.99	20.86	18.94	17.21	15.65	14.23	12.95

2.15 FINANCIAL ASSESSMENT OF THE PROJECT

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

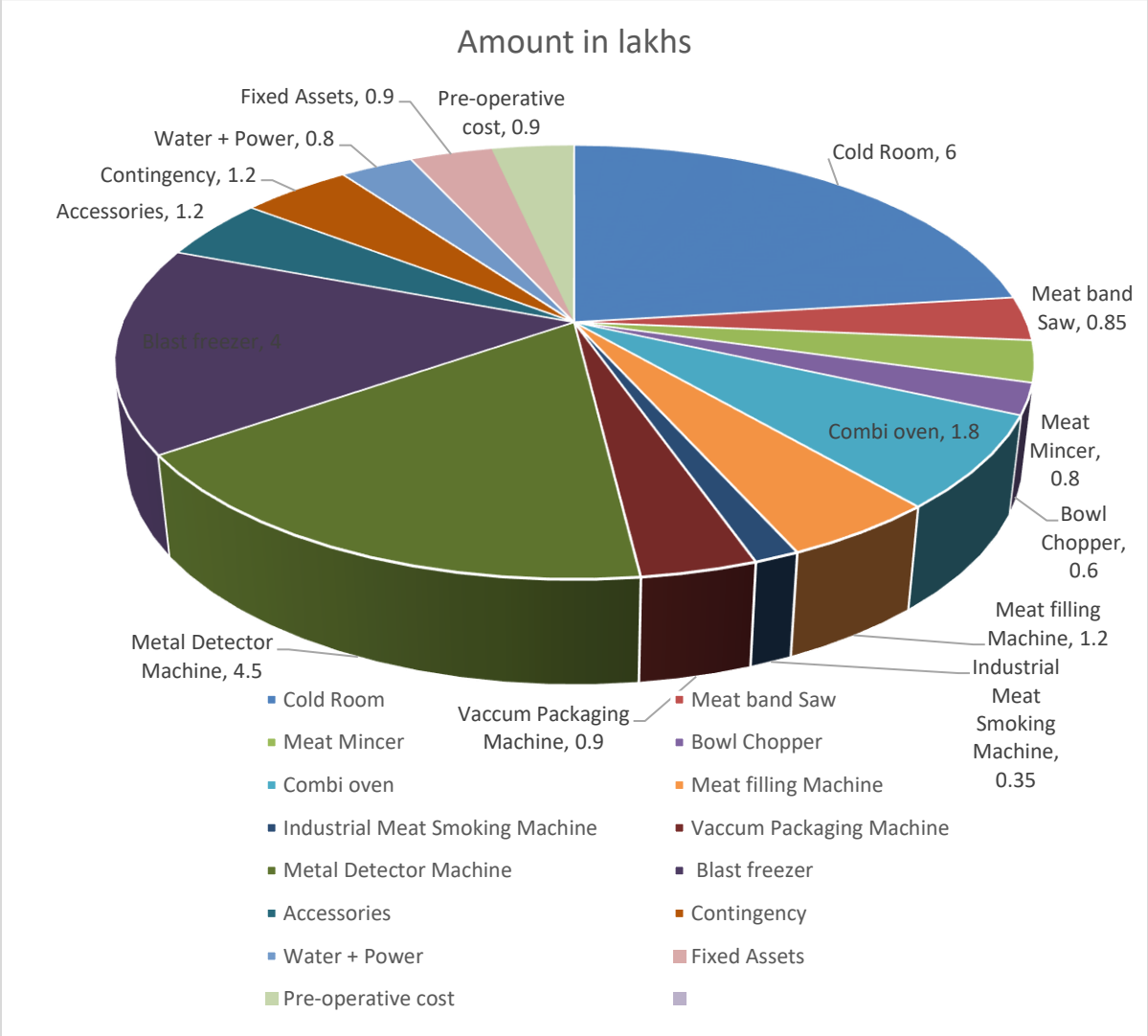
Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year	
Capital cost (Rs. in Lakh)	52.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Recurring cost (Rs. in Lakh)	2.60	304.99	358.96	412.93	493.74	547.61	547.61	547.61	
Total cost (Rs. in Lakh)	54.93	304.99	358.96	412.93	493.74	547.61	547.61	547.61	3268.39
Benefit (Rs. in Lakh)	0.00	577.50	682.50	787.50	945.00	1050.00	1050.00	1050.00	
Total Depreciated value of all assets (Rs. in Lakh)								12.95	
Total benefits (Rs. in Lakh)	0.00	577.50	682.50	787.50	945.00	1050.00	1050.00	1062.95	6155.45
Benefit-Cost Ratio (BCR): (Highly Profitable project)	**1.883**								
Net Present Worth (NPW):	2887.07								

2.16 BREAK EVEN ANALYSIS

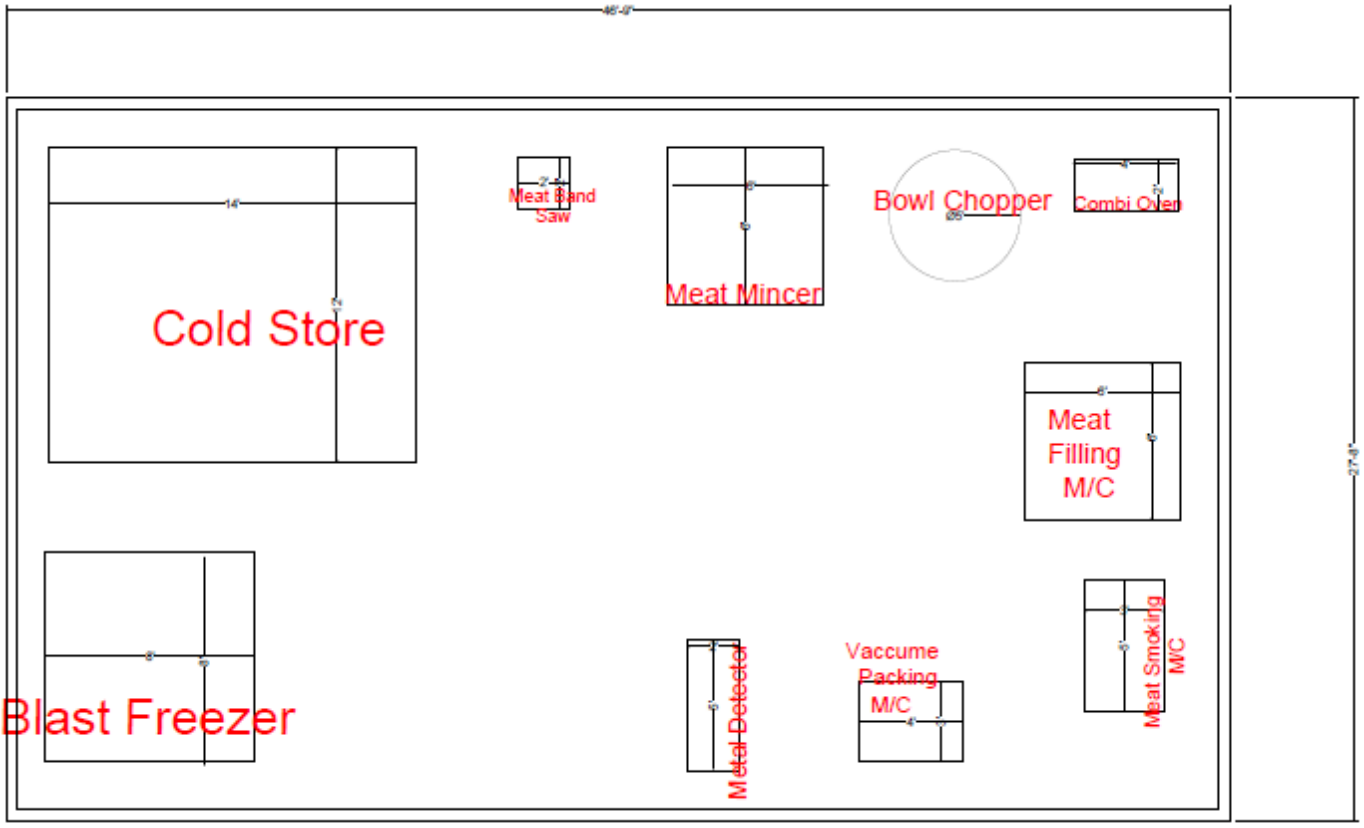
Break even analysis indicates costs-volume profit relations in the short run. This is the level at which, the firm is in no loss no profit situation.

Sr. No.	Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%	100%	100%
	Production MT/Annum		82.5	97.5	112.5	135	150	150	150
A	Fixed Cost (Rs. in Lakh)								
	Permanent staff salaries	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	Depreciation on building @ 5% per annum	0.23	0.21	0.20	0.19	0.18	0.17	0.17	0.16
	Depreciation on machinery @ 10% per annum	2.27	2.04	1.83	1.65	1.49	1.34	1.20	1.08
	Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
	Interest on term loan	2.56	2.47	2.37	2.26	2.14	2.01	1.87	1.70
	Insurance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total Fixed Cost (Rs. in Lakh)	**10.87**	**10.52**	**10.20**	**9.88**	**9.58**	**9.28**	**8.98**	**8.68**
B	**Sales Revenue (Rs. in Lakh)**	**0.0**	**577.5**	**682.5**	**787.5**	**945.0**	**1050.0**	**1050.0**	**1050.0**
C	Variable Cost (Rs. in Lakh)								
	Raw Meat (Av. Price @ Rs. 170/Kg)	0.00	287.29	339.53	391.76	470.11	522.35	522.35	522.35
	Packaging materials	0.00	5.78	6.83	7.88	9.45	10.50	10.50	10.50
	Casual staff salaries	0.00	3.90	3.90	3.90	3.90	3.90	3.90	3.90
	Utilities (Electricity, Fuel)	0.00	3.22	3.81	4.40	5.28	5.86	5.86	5.86
	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90	0.90	0.90
	Miscellaneous expenses	0.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Interest on working capital @ 12%	0.00	7.70	9.10	12.40	12.40	12.40	12.40	12.40
	Total Variable Cost (Rs. in Lakh)	**0.50**	**310.59**	**365.96**	**423.24**	**504.04**	**557.91**	**557.91**	**557.91**
D	Break Even Point (BEP)								
	as % of sale	-	12.00	10.00	8.00	8.00	7.00	7.00	6.00
	Break Even Point (BEP) in terms of sales value (Rs. in Lakhs)	-	69.30	68.25	63.00	75.60	73.50	73.50	63.00

2.17 PIE CHART FOR BETTER UNDERSTANDING OF EXPENSES OF EACH HEAD:



2.18 TYPICAL MEAT SEEKH KABAAB MANUFACTURING UNIT LAYOUT



2.19 MACHINERY SUPPLIERS

S.no	Name of the company	Machineries
1.	MMM Buxabhoy & Co 140 Sarang Street 1st Floor, Near Crawford Market, Mumbai, India. Tel: +91 22 2344 2902 Fax: +91 22 2345 2532 Email: yusufs@vsnl.com; mmmb@vsnl.com;	Packaging and labelling machines
2.	Acufil Machines S. F. No. 120/2, Kalapatty Post Office, Coimbatore - 641 035, Tamil Nadu, India. Tel: +91 422 2666108/2669909 Fax: +91 422 2666255 Email : acufilmachines@yahoo.co.in	Dryer; Packaging and labelling machines

3.	Premium Engineers Pvt Ltd Plot No 2009, Phase IV, GIDC Vatva, Ahmedabad 382445, India. Tel: +91 7925830836 Fax: +91 7925830965	Dryer; Milling & grinding machinery
4.	Central Institute of Agricultural Engineering, Nabi Bagh Berasia Road, Bhopal 462 038 Madhya Pradesh, India. Tel: +91 755 2737191 Fax: +91 755 2734016	Slicing machinery; Cleaning machinery; Milling & grinding machinery
5.	Gardners Corporation 158 Golf Links, New Delhi 110003, India. Tel: +91 11 3344287/3363640 Fax: +91 11 3717179	Slicing machinery; Cleaning machinery; Milling & grinding machinery; Packaging and labelling machines
6.	Rajan Universal Exports Post Bag no 250, 162 Linghi Chetty Street, Chennai 600 001, India. Tel: +91 44 25341711/25340731/25340751 Fax: +9144 25342323	Cleaning machinery; Milling & grinding machinery
7.	Gurdeep Packaging Machines Harichand Mill compound, LBS Marg, Vikhroli, Mumbai 400 079, India. Tel: +91 22 2578 3521/577 5846/579 5982 Fax: +91 22 2577 2846	Packaging and labelling machines

3. LIMITATIONS OF MODEL DPR & GUIDELINES FOR ENTREPRENEURS

3.1 LIMITATIONS OF THE DPR

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

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

iii. The present DPR is based on certain assumptions on 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.

3.2 GUIDELINES FOR THE ENTREPRENEURS

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

ii. This model DPR must be made more comprehensive by the entrepreneur by including information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of entrepreneur's business, project location, raw material 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.

Contact Us
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