



Pre-feasibility Study

PRODUCTION UNIT OF CEREAL BREAKFAST FOODS

September 2021

“The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, and revenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA’s website and consult financial experts to stay current with market conditions.”

Small and Medium Enterprises Development Authority
Ministry of Industries and Production
Government of Pakistan

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1. DISCLAIMER

This information memorandum is to introduce the subject matter and provide a general idea and information on the said matter. Although, the material included in this document is based on data/information gathered from various reliable sources; however, it is based upon certain assumptions, which may differ from case to case. The information has been provided on, as is where is basis without any warranties or assertions as to the correctness or soundness thereof. Although, due care and diligence has been taken to compile this document, the contained information may vary due to any change in any of the concerned factors, and the actual results may differ substantially from the presented information. SMEDA, its employees or agents do not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The contained information does not preclude any further professional advice to be obtained by the user. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information which is necessary for making an informed decision, including taking professional advice from a qualified consultant/technical expert before taking any decision to act upon the information.

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Document Control

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2. EXECUTIVE SUMMARY

Cereals breakfast foods are made from flours of different cereals which include corn, wheat, oats and barley. Cereal breakfast foods are rich in nutritious contents. These are easy-to-cook foods which can be eaten in breakfast; usually with hot or cold milk.

This “Pre-feasibility Document” provides details for setting up a “Production Unit of Cereal Breakfast Foods” (hereinafter referred to as the proposed unit). The products produced by the proposed unit include corn flakes, wheat flakes, oat flakes and bran flakes. Health considerations are turning the cereal breakfast foods into an appealing alternative to the traditional Pakistani breakfast foods. An increasing consumption trends of cereal breakfast foods in the country makes the proposed project an attractive investment proposition.

Flakes are the food products made from corn, wheat, rice, oats, and other cereal grains. These are prepared by removing the outer coating from the seed, processing the grain into groats, cooking the groats in a sugar and salt syrup, and rolling out the meal into thin flakes, which are then toasted in ovens. Porridge is another traditional breakfast food that is simply made by cooking oats etc. with water or milk.

Approximately three fourth of cereal breakfast food market of Pakistan is controlled by one major player, Fauji Cereals. Number of other local manufacturers are also operating in Pakistani market. In addition to the locally produced products, there are also some foreign cereal products available in the local market. Considering these facts, the competition in the manufacturing business of cereal breakfast foods appears to be tough. However, the opportunities for growth in this business still look promising, considering the increasing share of health-conscious people in the local population. Adoption of new eating habits are making cereal food an appealing alternative to the traditional Pakistani breakfast foods.

The proposed unit may be established in industrial areas of larger to medium cities of the country; like Lahore, Karachi, Islamabad, Peshawar, Quetta, Faisalabad, Hyderabad, Multan, Rawalpindi, Bahawalpur, Sargodha, Sukkur, Sialkot, Gujranwala, Mardan, Lasbela, Sahiwal, Gujrat, etc. These cities are good locations due to the availability of strong supply chain and infrastructure. Availability of skilled and low-cost labor is also a major factor to select these cities. Majority of target customers of the proposed unit also exist in the urban areas of Pakistan.

The production unit will be set up in a rented building having an area of 4,725 square feet (21 Marla). The proposed business will have maximum capacity of producing 268,800 kg of cereal breakfast food in a year. As per the assumed distribution, this is equal to 1,075,200 packets; which includes 537,600 150-gram packets, 322,560 250-gram packets and 215,040 500-gram packets.

The project requires a total investment of PKR 27.57 million. This includes capital investment of PKR 24.13 million and working capital of PKR 3.44 million. It is proposed that the project shall be financed through 100% equity. The Net Present Value (NPV) of project is PKR 169.60 million with an Internal Rate of Return (IRR) of 71% and a Payback period of 2.07 years. Further, this project is expected to generate Gross

Annual Revenues of PKR 107.25 million during the first year of operations, Gross Profit (GP) ratio ranging from 48% to 58% and Net Profit (NP) ratio ranging from 8% to 21% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 37% (100,185 kg which is equal to 400,739 packets) with annual breakeven revenue of PKR 79.95 million.

The proposed project may also be established using leveraged financing. At 50% financing at a cost of KIBOR+3%, the proposed business provides Net Present Value (NPV) of PKR 191.61 million, Internal Rate of Return (IRR) of 70% and Payback period of 2.10 years.

The proposed project will provide employment opportunities to 46 people, working in a shift of 8 hours for 280 days in a year. High return on investment and steady growth of business is expected with the entrepreneur having some prior experience or education in the related field of business. The legal business status of this project is proposed as “sole-proprietorship business”. Further, the proposed project may also be established as a “Partnership Concern” or “Private Limited Company”.

3. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with the objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectorial research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

National Business Development Program for SMEs (NBDP) is a project of SMEDA, funded through Public Sector Development Program of Government of Pakistan.

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of providing an effective handholding to SMEs. The proposed program aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

4. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to provide information to the potential investors about establishing a “Production Unit of Cereal Breakfast Foods”. The document provides a general understanding of the business to facilitate potential investors in crucial and effective investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business setup and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form the basis of any investment decision.

5. BRIEF DESCRIPTION OF PROJECT & PRODUCTS

Breakfast cereal products were originally sold as milled grains of wheat, corn and oats that required further cooking in the home prior to consumption. In this century, due to an increasing preference for reducing the amount of in-home preparation time, breakfast cereal foods were introduced. These foods evolved from the simple procedure of milling grains for cereal products (that required cooking) to the manufacturing of convenient ready-to-eat products that can be quickly prepared.

Porridge cereal was known in Europe and Russia for thousands of years. Native people of North America had their variants of processed grains which they used for nourishment. The first breakfast cereals were made by Ferdinand Schumacher, a German immigrant, in 1854. These flakes were produced on a hand-driven oats grinder in the back room of Ferdinand Schumacher store in Akron, Ohio.

Cereal breakfast foods are made from processed grains that are often eaten with the first meal of the day. It is primarily consumed as a breakfast, mostly by upper middle and elite class. There are many varieties of cereal breakfast foods. Ready-to-eat breakfast cereals dominate the market owing to the convenience it offers to the consumers. Whole grain-based ready-to-eat cereals are leading the market due to the value-addition of micronutrients in these products. Also, the leading companies are trying to blend organic and healthy ingredients to boost breakfast cereals' sales.

The production of cereal breakfast foods in Pakistan was started in 1956 as a result of collaboration between Fauji Cereals, a Pakistani company and Quaker Oats, an

English company. The proposed production unit of Cereal Breakfast foods will produce different types of cereal foods from locally grown grains. The cereal products to be produced by the proposed unit are discussed in the following paragraphs:

Corn Flakes

Corn flakes represent a breakfast cereal made from toasting flakes of corn (maize). The cereal was first created by Will Kellogg in 1894 for patients in a hospital where he worked with his brother John Kellogg. The breakfast cereal proved popular among the patients and Kellogg subsequently started what became the famous Kellogg Company to produce corn flakes for the wider public. Along with corn, other ingredients, including sugar, salt and barley malt extract are also added in the required proportions to manufacture corn flakes. Corn flakes are rich in vitamins, minerals, dietary fibers, proteins and carbohydrates. Moreover, corn flakes also contain thiamine content that boosts up carbohydrate metabolism and improves cognitive functioning. Figure 1 shows corn flakes.

Figure 1: Corn Flakes



Wheat Flakes

Wheat flakes is a type of cereal breakfast which is produced from wheat flour and wheat bran.¹ The product offers lot of health benefits. Figure 2 shows wheat flakes.

Figure 2: Wheat Flakes



¹ Bran is the hard outer layer of the wheat kernel, which contains various nutrients and fiber.

Oat Flakes

Oat flakes are made from oats (known as 'Jao' in Urdu). This food is extremely versatile, and it can be found in a range of recipes and an assortment of places as a result. Due to high nutritional value, it can be a very healthy and useful addition to the human diet. Oat flakes are gluten-free whole grain and a great source of important vitamins, minerals, fiber and antioxidants. These offer useful health benefits of weight loss, controlled blood sugar levels and a reduced risk of heart disease.² Figure 3 shows oat flakes.

Figure 3: Oat Flakes



Bran Flakes

Bran³ (known as 'Choker' in Urdu) flakes is another breakfast cereal consisting of small toasted flakes of wheat bran, together with binders and seasoning. Bran offers a high value to the digestive system as roughage. It also reduces the risk of heart attack. Bran Flakes are usually served with cold milk. Figure 4 shows bran flakes.

Figure 4: Bran Flakes



² It reduces cholesterol level in hearts which is the major cause of all heart disease.

³ Bran is the edible broken seed coat, or protective outer layer, of wheat, rye, or other cereal grains, separated from the kernel.

Cereal breakfast market in Pakistan is captured by few manufacturers; of which Fauji Cereals alone covers about three fourth of the whole market. Cereal breakfast food market is difficult to penetrate. Aggressive marketing and advertising campaign and lower profit margins on the products are important factors to attract the consumers to buy the newly launched products.

5.1. Machinery and Equipment

Details of the machinery and equipment used in this proposed project are as follows:

Mixer

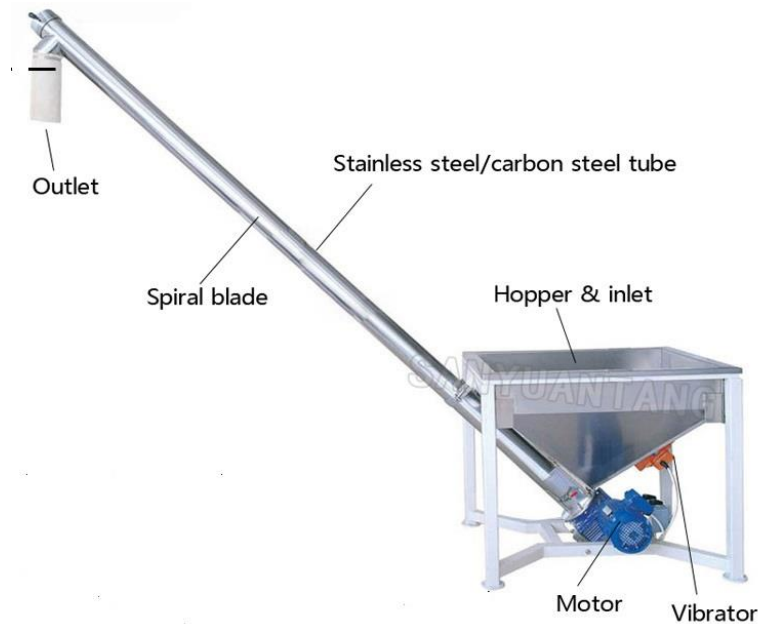
Mixer is used to mix raw materials with water. It has a food grade stainless-steel body. It has a capacity of mixing 120 kg/hour of raw materials which include flour, salt, sugar and water. The capacity of the whole production unit will depend on the capacity of the mixer. Figure 5 shows the mixer.

Figure 5: Mixer



Screw Conveyor

Screw conveyor uses mechanism of rotating helical screw blade within a tube to move the material. Screw conveyors can be operated with a flow of material inclined upward. It is used to convey mixed material from the mixer through bucket to the extruder. It has a capacity of 150 kg/hour of conveying raw material to the extruder. Table 6 shows screw conveyor.

Figure 6: Screw Conveyor**Twin Screw Extruder**

The twin-screw extruder is a machine in which the mixed raw material is heated and rolled through screws and then pellets are formed. Twin-screw extruder comprises of a pair of parallel screws, rotating inside a barrel with an 8-shaped cross-section. At the exit end, each half of the barrel converges into a short conical section, each with a die at the apex. The screws can be co-rotating or counter-rotating. The proposed extruder has a capacity of 150 kg/hour of mixed raw material. Figure 7 shows a twin-screw extruder.

Figure 7: Twin Screw Extruder

Vibrating Screen

Vibrating screen is used to transfer pellets from the twin screw extruder to the air conveyor. It is placed at the outlet of the twin screw extruder. This equipment uses the vibration motor as the vibration source to make the material move in the downward direction. There is an angle of inclination between the two motors of the vibrating screen, this screen separate the pellets formed in the twin screw extruder and transfers these pellets to the air conveyor. Vibrating screen has a capacity to move 150 kg/hour pellets to the air conveyer. Figure 8 shows vibrating screen.

Figure 8: Vibrating Screen



Air Conveyor

Air conveyors are clean, quick and efficient machines that are designed to transport lightweight products or raw materials from one place to another. It works by having air flow through louvers to an inner chamber in which items are moved in machine in an upward direction. It has a capacity to move 150 kg/hour pellets to the roller cooling. There are four air conveyors in the plant which are placed at four different places in the production line; one after the vibrating screen, second after roller cooling machine, third after hydraulic pressure flaking machine and the fourth after tunnel dryer. Table 9 shows air conveyor.

Figure 9: Air Conveyor**Roller Cooling Machine**

Roller cooling machine helps in the drying of pellets. It works with the addition of material in a rotating drum in the presence of drying air. The drum is positioned at a slight horizontal slope to allow gravity to assist in moving the material through the drum. As the drum rotates, lifting parts pick up the material and drop it through the air stream (built in the drum) in order to maximize heat transfer efficiency. It has a capacity of 150 kg/hour of cooling pellets. Figure 10 shows roller cooling machine.

Figure 10: Roller Cooling Machine

Hydraulic Pressure Flaking Machine

Hydraulic Pressure Flaking Machine is used to press the pellets to convert them into flakes. It uses the principles of hydraulics to press the pellets formed by the twin screw extruder to make them flakes. It applies hydraulic force on the pellets through which they are converted into flakes. It has a capacity of pressing 150 kg pellets per hour to form flakes. Figure 11 shows hydraulic pressure flaking machine.

Figure 11: Hydraulic Pressure Flaking Machine



Tunnel Dryer

Tunnel dryer is used to dry the flakes. It is an electric dryer having three layers of 5 meter length. It consists of rack system and the flakes are placed in the racks. It removes the excess moisture by using electric heating system. At the inlet of the tunnel dryer, the moisture level is usually 25%. In the tunnel dryer, 5 to 10% moisture is removed and the flakes coming out of the dryer have a moisture level of around 15%. It has a capacity to dry 150 kg/hour flakes. Figure 12 shows tunnel dryer.

Figure 12: Tunnel Dryer



High-Temperature Gas Oven

High temperature gas oven inflates the flakes in the oven to remove the remaining moisture and to bake the flakes. It ensures good quality of the flakes. It uses gas for heating purpose maintaining the temperature in the range 275-330°C. The gas consumption for this oven will be 15kg/h. Electricity is used to operate an electric conveyor installed in the oven which conveys the baked flakes from the oven to the cooling conveyor. The oven has a capacity of 150 kg/hour. Figure 13 shows high temperature gas oven.

Figure 13: High Temperature Gas Oven



Cooling conveyor

Cooling conveyor uses high-powered internal fans to cool the products as they travel along the production line on the conveyor belt. By the time the products pass through the conveyor, they are ready for packaging and shipping. Cooling Conveyor has a capacity of 150 kg/hour. Figure 14 shows cooling conveyor.

Figure 14: Cooling Conveyor

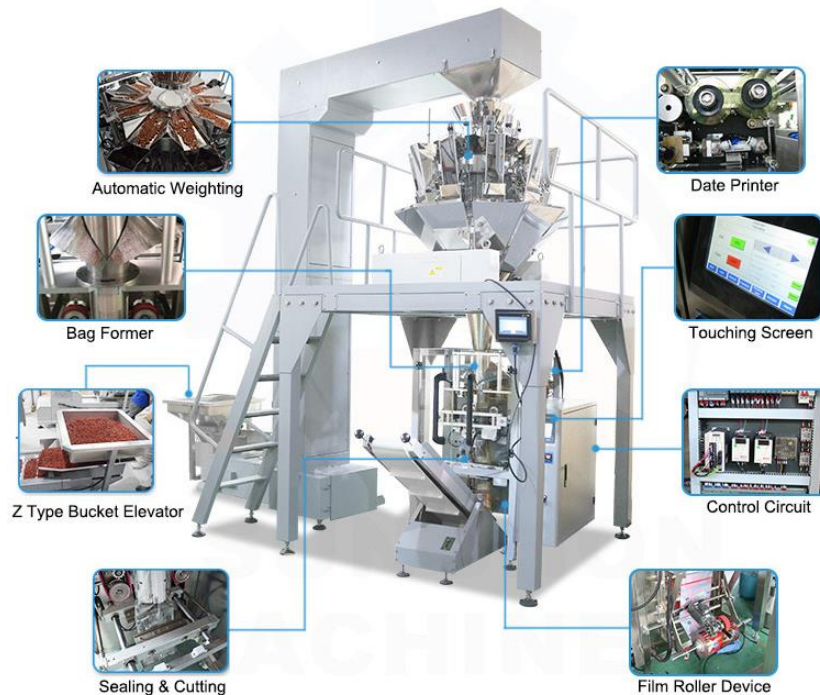


Automatic Packing Machine

Automatic packing machine is used for packing the cereal breakfast food products. It is equipped with automatic weighing, date printer, bag former, Z-type bucket elevator, touch screen, control circuit, film roller device and sealing and cutting. It has a capacity of packing 10 packets per minute. It will automatically print expiry date on the packets.

Figure 15 shows automatic packaging machine.

Figure 15: Automatic Packaging Machine



Near Infrared Grain Analyzer SGrain

Near Infrared Grain Analyzer SGrain is a portable NIT (Near Infrared Transmission) grain and flour analyzer designed to analyze whole grains and oil seeds as well as flour content parameters. It is used for analyzing the protein, moisture, ash, gluten content in the flour. Figure 16 shows Near Infrared Grain Analyzer SGrain.

Figure 16: Near Infrared Grain Analyzer SGrain**Electronic Weighing Scale (500kg)**

Electronic Weigh Scale is used to measure the required weight of the raw materials to be transferred into the mixer for mixing. Figure 17 shows electronic weigh scale.

Figure 17: Electronic Weigh Scale**5.2. The Production Process Flow**

Production process for all kinds of flakes is the same; the only difference is the raw material used. Corn flour is used for making corn flakes; wheat flour is used for making wheat flakes whereas, oat flour and bran flour are respectively used for making oats flakes and bran flakes.

Ingredients

For producing flakes, the proportion of individual ingredients in the recipes of each flake product is based on recipes of international brands of cereal breakfast foods. The

ingredients used for production of corn flakes, wheat flakes, oat flakes and bran flakes are listed as follows:

Corn Flakes

The most commonly used ingredients in production of corn flakes are water (25%), corn flour (65%), sugar (2%), salt (1%) and barley malt extract (7%).

Wheat Flakes

The most commonly used ingredients in production of wheat flakes; water (25%), wheat flour (50%), bran (15%), sugar (2%), barley malt extract (7%) and salt (1%).

Oat Flakes

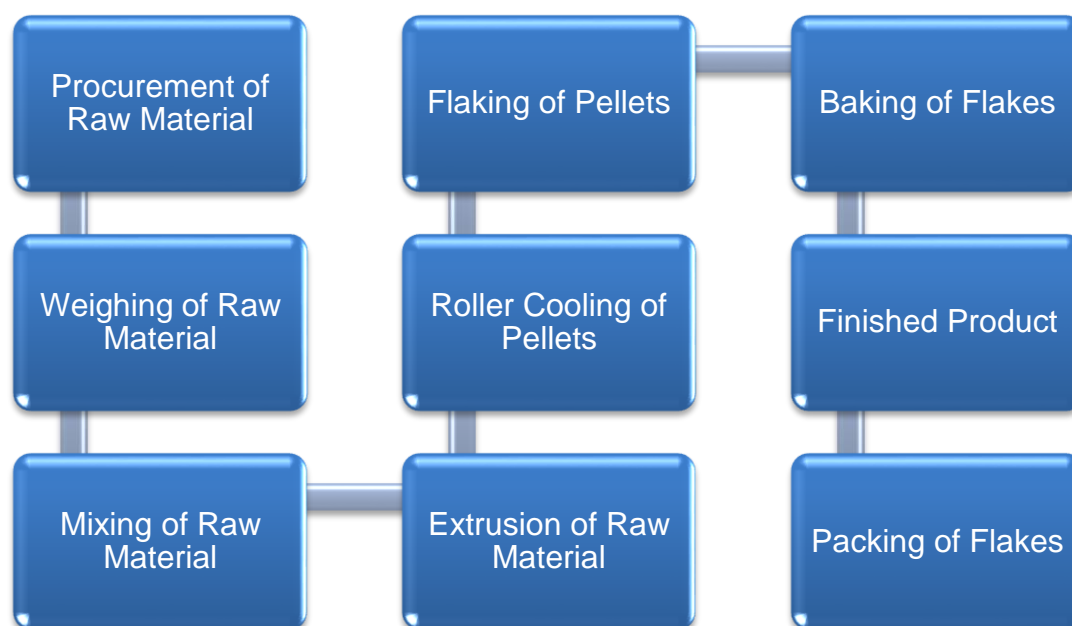
Oat flour (75%) and water (25%) is used in production of oat flakes.

Bran Flakes

The most commonly used ingredients in production of bran flakes include water (25%) wheat flour (45%), wheat bran (20%), sugar (2%), barley malt extract (7%) and salt (1%).

The production process flow of production of cereal breakfast food is shown in Figure 18.

Figure 18: Production Process Flow of Cereal Breakfast Food



Brief description of the process flow is as follows:

Procurement of Raw Material

The raw materials including corn flour, wheat flour, oat flour, bran flour⁴, sugar, wheat bran and salt are procured. These raw materials can be easily purchased locally from

⁴ All these flours are whole grain flour. Whole-grain flour is defined as having the compositional ingredients of bran, germ, and endosperm in the flour, as is present in the native state.

large number of suppliers, available in every province. The grains used for the flour manufacturing process are grown locally in Pakistan and are easily available.

In Pakistan, sowing of wheat takes place from October to December and harvesting is done during the months of March to May. In Pakistan, sowing of oat takes place from September to April and it is harvested within the next 55 to 60 days. In Pakistan, maize crop is sown mainly in two seasons; spring and the autumn season. It can be harvested in 60 to 65 days. Corn flour, wheat flour and oat flour are procured from the flour mills. The ground flour is procured from the flour mills in the relevant season.

Quality of Raw Material

After the procurement, the quality of procured raw material is checked through the Near Infrared Grain Analyzer SGrain. Quality controller check the moisture, protein etc. in the raw material using this analyzer. After this quality test, the raw material is approved for use.

Weighing of Raw Material

After the quality check, the raw materials are weighed in the required proportions as per the recipe of each product. The raw materials are weighed using electronic weigh scale.

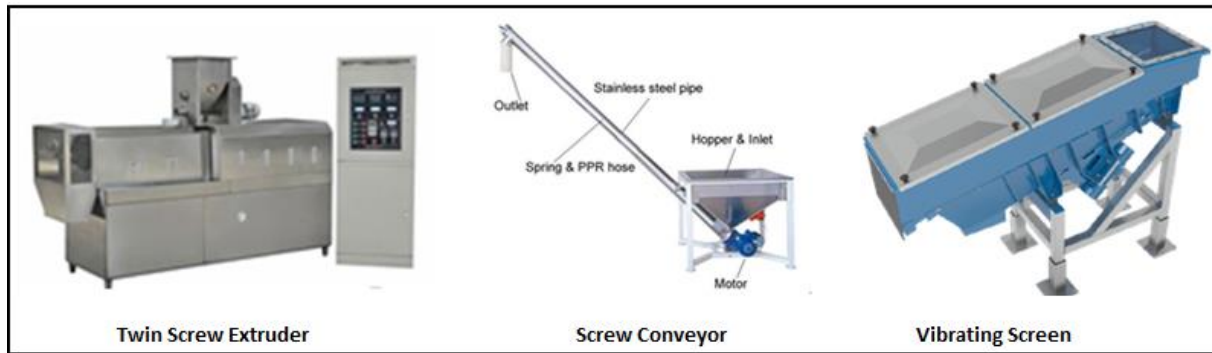
Mixing of Raw Materials

After issuance of raw materials from store, they are mixed with water in the mixer. Mixing is carried out till a homogenous material is obtained.

Extrusion of Raw Material

The mixed material coming out of the mixer is fed manually by the labor into the screw conveyor. From screw conveyor, the material is fed into the feeding hopper of the twin screw extruder automatically. Twin screw extrusion carries out thermal-chemical treatment⁵ of mixed raw materials which forms semi-finished product (pellets). The semi-finished product in form of pellets is discharged from the die placed at the outlet of the extruder. These pellets are then fed into the vibrating screen which uses vibration to prevent the pellets from joining together. Vibrating screen uses both vibration and gravity to move the pellets into the air conveyer. Figure 19 shows extruder and vibrating screen.

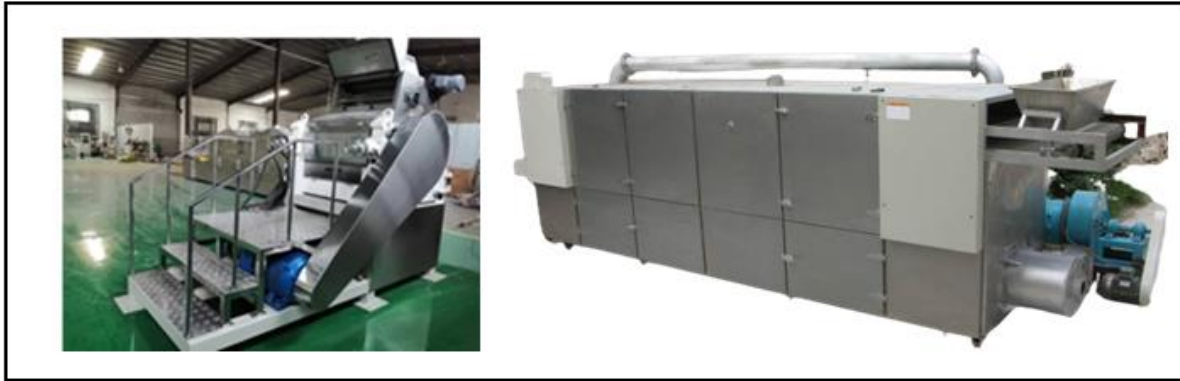
⁵ Thermal treatment is a remedial technique where solid materials such as sediments, soil or sludge, are heated to increase the mobility and facilitate the extraction of organic contaminants.

Figure 19: Twin Screw Extruder, Screw Conveyor and Vibrating Screen**Roller Cooling of Pellets**

The semi-finished product (pellets) are conveyed to the roller cooling machine by air conveyer. The roller cooling machine works by tumbling the pellets in a rotating drum in the presence of dry air. The drum is placed at a slight horizontal slope to allow gravity to assist material in moving through the drum. As the drum rotates, lifting parts pick up the pellets and drop them through the air stream in order to maximize heat transfer efficiency. The pellets are cooled in the drum and then transferred to the next process for flaking. Figure 20 shows roller cooling machine and air conveyer.

Figure 20: Roller Cooling Machine and Air Conveyor**Flaking of Pellets**

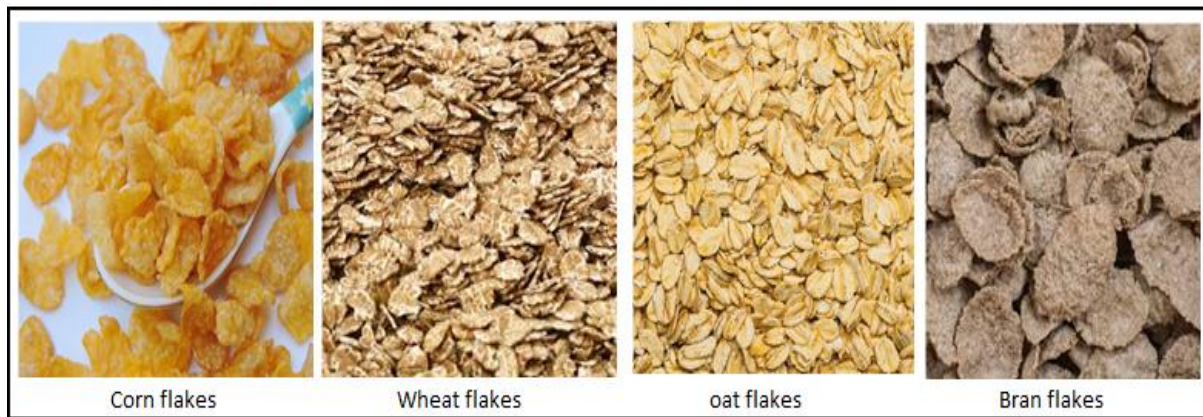
Pellets are transferred from roller cooling machine to the hydraulic pressure flaking machine through air conveyer. In this machine, the pellets are subjected to several tons of pressure to flatten them to convert them into flakes. For that, they are passed between two large metal rollers. The flakes are then conveyed through an air conveyer to tunnel dryer where they are exposed to heat to remove the excess moisture. Figure 21 shows hydraulic press flaking machine and dryer.

Figure 21: Hydraulic Flaking Machine and Dryer**Baking of Flakes**

Flakes are transferred from dryer through air conveyer into high temperature continuous gas oven. Gas oven bakes the flakes for 2-5 minutes making the flakes crispy for better taste and texture. The time for baking is set through a computerized system build in the oven. Time varies from 2 to 5 minutes depending upon the type of the product being toasted. Oven temperature ranges from 525-625°F (275-330°C). Figure 22 shows high temperature gas oven.

Figure 22: High Temperature Gas Oven**Finished Product**

After baking of flakes in the oven, the finished product is cooled on a cooling conveyer by the built-in fans. The fan helps to cool flakes and the conveyor conveys the cooled flakes (finished product) to the bucket. The working capacity of cooling conveyer is 500 kg/hour of flakes. The finished product is ready to be packed. Figure 23 shows cooling conveyer and Figure 24 shows finished products.

Figure 23: Cooling Conveyor**Figure 24: Finished Products****Packing of Flakes**

The finished products (corn flakes, wheat flakes, oat flakes and bran flakes) are automatically loaded into automatic packing machine (through cooling conveyor) which packs at the rate of 10 packets per minute. Finished goods are filled in plastic packages of 150 grams, 250 grams and 500 grams which are then packed in attractive box packing of three sizes. The boxes are then packed into the large cartons; after which the products are ready for delivery. Products are delivered to the target customers and markets and transferred to the stores through carry van. The sales are usually done on credit for a period of 30 days. Figure 25 shows packed flakes.

Figure 25: Packing of Flakes

5.3. Installed and Operational Capacities

The proposed production unit will run in single shift of 8 hours for 280 days in a year and produce finished products in the packing's of 150 grams, 250 grams and 500 grams for all three types of cereals. The proposed business will have maximum capacity of producing 268,800 kg of cereal breakfast food in a year. As per the assumed distribution, this is equal to 1,075,200 packets. The production ratios for the proposed production unit for cereal breakfast are shown in Table 2, Table 3 and Table 4.

Table 1: Installed and Operational Capacity

Product	Production Capacity of Machine (kg/hour)	Per Day Capacity (kg)	Per Day Capacity (grams)	Production Ratio	Weight per Packet (grams)	Total Packets per day	Total Annual Capacity per year (Packets)	Initial Year Capacity @ 50%
Cereal Food (150 Gram Packets)	120	960	960,000	30%	150	1,920	537,600	268,800
Cereal Food (250 Gram Packets)				30%	250	1,152	322,560	161,280
Cereal Food (500 Gram Packets)				40%	500	768	215,040	107,520
Total						3,840	1,075,200	537,600

Table 2: Product Wise Distribution-150 Grams Packets

Products	Ratio	Total Annual Capacity per year (Packets)	Annual Capacity Per Year (Packets)	Initial Capacity per Year @50%
Corn Flakes	50%	537,600	268,800	134,400
Wheat Flakes	35%		188,160	94,080
Oat Flakes	10%		53,760	26,880
Bran Flakes	5%		26,880	13,440
Total	100%		537,600	268,800

Table 3: Product Wise Distribution-250 Grams Packets

Products	Ratio	Total Annual Capacity per year (Packets)	Annual Capacity Per Year (Packets)	Intial Capacity per Year @50%
Corn Flakes	50%	322,560	161,280	80,640
Wheat Flakes	35%		112,896	56,448
Oat Flakes	10%		32,256	16,128
Bran Flakes	5%		16,128	8,064
Total	100%		322,560	161,280

Table 4: Product Wise Distribution-500 Grams Packets

Products	Ratio	Total Annual Capacity per year (Packets)	Annual Capacity Per Year (Packets)	Intial Capacity per Year @50%
Corn Flakes	50%	215,040	107,520	53,760
Wheat Flakes	35%		75,264	37,632
Oat Flakes	10%		21,504	10,752
Bran Flakes	5%		10,752	5,376
Total	100%		215,040	107,520

6. CRITICAL FACTORS

Before making the decision to invest in Production Unit of Cereal Breakfast Foods, one should carefully analyze the associated risk factors. The important considerations in this regard include the following:

- Extensive marketing and advertising campaign is required to overcome the current entry barriers.
- Considering high competition in the market, the pricing should be very competitive and the product prices should be lower than the prices of the currently available products to gain initial penetration in the market.
- Appointment of trained labor and using of quality raw material plays an important role in producing quality product.
- Proper cleaning of equipment to ensure strict compliance with the required standards of hygiene and safety is important.
- Strong aggressive and efficient, distribution agents are required to ensure continuous supply to the customers.

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The proposed manufacturing unit has potential to provide good entrepreneurship opportunity if the business is established in large to medium cities of Pakistan; such as Karachi, Lahore, Islamabad, Peshawar, Quetta, Hyderabad, Gujranwala, Faisalabad, Sialkot, Sukkur, Rawalpindi, Multan, Bahawalpur, Gujrat, Sargodha, Lasbela, Mardan, Sahiwal, Gujrat, etc. These cities are suitable locations to establish the proposed manufacturing unit due to easy access to raw material and availability of skilled and low-cost labor.

These locations offer good potential for grain breakfast business. The main reason is that in these areas people have a busy life and they like consuming ready-made food or semi cooked food due to lack of time as compared to the conventional morning meals. Besides, grains are gaining popularity in the metropolitan spaces of Pakistan as a snacks choice and parents are now preferring cereals for their children as a snack instead of other unhealthy foods.

8. POTENTIAL TARGET MARKETS/CUSTOMERS

Influence of western culture and western lifestyle and trends has also impacted the eating habits of Pakistani society. More and more people are adopting and regularly consuming western food items. This change has also increased the consumption of breakfast cereals by the general public of Pakistan. Additionally, adopting of healthier food items in urban areas of Pakistan compared to traditional food items such as *parathas* has also led to increase in demand and consumption pattern of cereals breakfast foods.

The potential target markets or customers for cereal breakfast foods include people from all age groups. The target market/customers for cereal breakfast foods are retails shops, shopping malls, hotels, hospitals, etc.

The revenue of cereal breakfast businesses of Pakistan recorded an average growth rate of 2.9% during the period from 2014 to 2019. The revenue generated by cereal breakfast businesses of Pakistan in 2020 was US \$ 434 million.⁶ Currently, Pakistan is not exporting any cereal breakfast food products because of high competition in the international markets. Pakistan also imports cereal breakfast foods of different brands. Kellogg, Alba, Nestle and Mico are some of the major imported products. Their prices are high as compared to the locally produced products. Fauji Cereals is the main manufacturer in Pakistan for producing cereal breakfast food having a market share of around 75%.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of production unit of cereal breakfast foods. Various assumptions relevant to revenue and costs along with the results of the analysis are outlined in this section.

The projected Income Statement, Cash Flow Statement and Balance Sheet are attached as annexures of this document.

All the figures in this financial model have been calculated after carefully taking into account the relevant assumptions and target market.

9.1. Initial Project Cost

Table 5 provides fixed and working capital requirements for establishment and operations of cereal breakfast production unit.

Table 5: Initial Project Cost estimates

Particulars	Cost (PKR)	Reference
Land		9.1.1
Building / Infrastructure	584,075	9.1.2
Machinery & equipment	17,922,500	9.1.3
Furniture & fixtures	1,053,000	9.1.4
Office vehicles	1,167,250	9.1.5
Office equipment	1,606,000	9.1.6
Security against building	750,000	9.1.7
Pre-operating costs	1,048,255	9.1.8
Total Capital Cost – (A)	24,131,080	

⁶ <https://www.statista.com/outlook/cmo/food/bread-cereal-products/pakistan#revenue>

Equipment spare part inventory	298,708	
Raw Material Inventory	2,141,401	
Cash	1,000,000	
Working Capital Requirement - (B)	3,440,109	9.1.9
Total Project Cost - (A+B)	27,571,189	

9.1.1. Land

The proposed unit will be established in a rented building to avoid the high cost of land. Suitable location for setting up a production unit of cereal breakfast foods can easily found on rent. Therefore, no land cost has been added to the project cost. Total space requirement for the proposed center has been estimated as 4,725 sq. feet (21 Marla). The breakup of the space requirement is provided in Table 6.

Table 6: Breakup of Space Requirement

Description	% Break-Up	Numbers	Area(Sq. feet.)
Office Area	14%	1	675
Store	20%	1	960
Production Area	57%	1	2,700
Open Area	3%	1	150
Washrooms	5%	4	240
Total	100%		4,725

9.1.2. Building and Renovation Cost

There will be no cost of building construction since the production unit will be started in a rented premises. However, there will be a renovation cost required to make the building usable for the business. The proposed project requires electricity load of around 108 KW for which an industrial electricity connection will be required. Building rent of PKR 250,000 per month has been included in the operating cost. Table 7 provide details of building renovation cost.

Table 7: Building Renovation Cost

Cost Item	Unit of Measurement	Total Units	Cost/Unit (PKR)	Total Cost (PKR)
Paint Cost	Liter	94	500	47,025
Labour Cost- Paint	Sq. Feet	9,405	10	94,050
Tiles Cost	Sq. Feet	2,700	120	324,000
Labour Cost- Tiles	Sq. Feet	2,700	40	108,000
Curtains	Units	2	3,000	6,000

Blinds	Units	1	5,000	5,000
Total (PKR)				584,075

9.1.3. Machinery and Equipment

Table 8 provides details of machinery and equipment for the proposed project.

Table 8: Machinery Cost Details

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Mixer (120kg/hr)	1	180,000	180,000
Screw conveyor (150 kg/hr)	1	250,000	250,000
Twin Screw Extruder (150 kg/hr)	1	1,800,000	1,800,000
Vibrating Screen (150 kg/hr)	1	200,000	200,000
Air Conveyor (150 kg/hr)	4	200,000	800,000
Roller cooling machine (150 kg/hr)	1	450,000	450,000
Hydraulic pressure flaking machine (150 kg/hr)	1	5,200,000	5,200,000
Tunnel Dryer (150 kg/hr)	1	1,400,000	1,400,000
High-temperature gas oven (150 kg/hr)	1	2,400,000	2,400,000
Cooling conveyor (30 Packets /minute)	1	370,000	370,000
Platform Trolley	4	30,000	120,000
Automatic packaging machine (10 bags/min)	1	1,300,000	1,300,000
Generator (125 KW) (Diesel)	1	1,000,000	1,000,000
Plastic Bucket	5	500	2,500
Electronic Weigh Scale (500 kg)	1	50,000	50,000
Quality Assurance Kit			2,400,000
Total			17,922,500

9.1.4. Office Equipment

Table 9 shows details of equipment cost required for the production unit.

Table 9: Equipment Cost Details

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Laptop	8	80,000	640,000
Desktop Computer	10	30,000	300,000
Printer	1	40,000	40,000
LED/LCD (Surveillance)	2	40,000	80,000

Water Dispenser	2	20,000	40,000
Ceiling Fan	15	5,000	75,000
Pedestal Fan	4	5,000	20,000
Wi-Fi / Internet Routers	1	5,000	5,000
Exhaust Fan	6	3,000	18,000
1.5 ton Air Conditioner	4	90,000	360,000
Security Cameras - 2MP	8	2,000	16,000
Digital Video Recorder (DVR)	1	12,000	12,000
Total			1,606,000

9.1.5. Furniture and Fixture

Table 10 provides details of furniture and fixtures.

Table 10: Furniture & Fixtures Cost Details

Cost Item	No`.	Unit Cost (PKR)	Total Cost (PKR)
Owner Tables	1	30,000	30,000
Owner Chairs	1	20,000	20,000
Office Table	6	8,000	48,000
Office Chair	6	25,000	150,000
Staff Chairs	35	10,000	350,000
Staff Table	10	20,000	200,000
Sofa Sets	3	35,000	105,000
Wall Racks	10	15,000	150,000
Total			1,053,000

9.1.6. Vehicles

Table 11 provides details of the vehicles required along with their cost for the proposed project.

Table 11: Office Vehicle Cost Details

Cost Item	No.	Unit Cost (PKR)	Registration Cost (PKR)	Total Cost (PKR)
Carry Van	1	1,075,000	10,750	1,085,750
Motorcycle	1	80,000	1,500	81,500
Total				1,167,250

9.1.7. Security against Building

Table 12 provides details of security against building.

Table 12: Security against Building

Costs Item	No.of Months	Unit Cost (PKR)	Total Cost (PKR)
Security Against Building	3	250,000	750,000
Total			750,000

9.1.8. Pre-Operating Costs

Table 13 provides details of estimated pre-operating costs.

Table 13: Pre-Operating Cost Details

Costs Item	No.	Hiring Months Before in Year 0	Unit Cost (PKR)	Total Cost (PKR)
Production Manager	1	2	100,000	200,000
Labour Skilled	1	1	35,000	35,000
Labour-Unskilled	1	1	25,000	25,000
Office Boy	1	1	20,000	20,000
Security Guard	1	1	25,000	25,000
Utilities Expense	1			743,255
Total Cost (PKR)				1,048,255

9.1.9. Initial Working Capital

Table 14 provides details of working capital requirements for the project.

Table 14: Initial Working Capital Details

Particulars	No. of Months	Total Cost (PKR)
Equipment spare part inventory	2	298,708
Raw material inventory	1	2,141,401
Cash		1,000,000
Total Working Capital		3,440,109

9.2. Breakeven Analysis

Table 15 shows calculation of breakeven analysis.

Table 15: Breakeven Analysis

Particulars	Amount First Year (PKR)	Profitability Ratio
Sales (PKR) – A	107,251,760	100%

Variable Cost (PKR) – B	57,892,090	54%
Contribution (PKR) (A-B) = C	49,359,670	46%
Fixed Cost (PKR) – D	36,793,842	34%
Contribution Margin	46%	
Breakeven		
Breakeven Revenue (PKR)	79,947,948	
Breakeven (kg)	100,185	
Breakeven (no of packets)	400,739	
Breakeven Capacity	37%	

9.3. Revenue Generation

Table 20 provides details for revenue generation of the production during the first year of operations.

Table 16: Revenue Details - Corn Flakes

Products	Units Sold during the Year (A)	Price Per Unit (PKR) (B)	Total Revenue (PKR) (A*B)
150 grams	128,800	150	19,320,000
250 grams	77,280	250	19,320,000
500 grams	51,520	500	25,760,000
Total	257,600		64,400,000

Table 17: Revenue Details - Wheat Flakes

Products	Units Sold during the Year (A)	Price Per Unit (PKR) (B)	Total Revenue (PKR) (A*B)
150 grams	90,160	100	9,016,000
250 grams	54,096	165	8,925,840
500 grams	36,064	325	11,720,800
Total	180,320		29,662,640

Table 18: Revenue Details – Oat Flakes

Products	Units Sold during the Year (A)	Price Per Unit (PKR) (B)	Total Revenue (PKR) (A*B)
150 grams	25,760	110	2,833,600
250 grams	15,456	180	2,782,080

500 grams	10,304	360	3,709,440
Total	51,520		9,325,120

Table 19: Revenue Details - Bran Flakes

Products	Units Sold during the Year (A)	Price Per Unit (PKR) (B)	Total Revenue (PKR) (A*B)
150 grams	12,880	90	1,159,200
250 grams	7,728	150	1,159,200
500 grams	5,152	300	1,545,600
Total	25,760		3,864,000

Table 20: Total Revenue Details

Products	Total Revenue (PKR)
Corn Flakes	64,400,000
Wheat Flakes	29,662,640
Oat Flakes	9,325,120
Bran Flakes	3,864,000
Total	107,251,760

9.4. Variable Cost Estimate

Variable costs of the project have been provided in Table 21.

Table 21: Variable Cost Estimate

Description of Costs	Amount (PKR)
Raw Material Cost-Corn Flakes*	13,403,250
Raw Material Cost-Wheat Flakes*	9,072,350
Raw Material Cost-Oat Flakes*	1,932,000
Raw Material Cost-Barn Flakes*	1,289,208
Packing Cost	1,586,816
Box Packing	7,161,280
Cartons for packaging	1,316,622
Direct Utilities Cost	1,318,974
Direct Labor	8,640,000
Machinery Maintenance – Cost	1,792,250

Fuel Cost-Generator	197,846
Office vehicles running expense-Carry Van	384,451
Water expense	513,936
Gas expense	7,070,700
Other Consumables	268,420
Communications expense (phone,mail, internet, etc.)	877,800
Office vehicles running expense-motorcycle	62,987
Office expenses (stationery, entertainment, etc.)	1,003,200
Total Variable Cost	57,892,090

In the process of flakes manufacturing, 15 to 20% of raw material (water) is lost which reduces the total weight of the finished good. The weight of the material in the following tables showing raw materials consumption has been calculated assuming 20% loss.

Table 22: Raw Material Cost - Corn Flakes

Cost Item	Consumption per Batch (kg)	Cost per kg (PKR)	Cost (PKR)
Water	30	-	-
Corn Flour	78	80	6,240
Sugar	2.4	110	264
Barley malt extract	8.4	1,600	13,440
Salt	1.2	30	36.00
Total (PKR)	120		19,980
Number of packets (150 grams) per batch			640
Cost per Packet (PKR)			31.22
Number of packets (250 grams) per batch			384
Cost per Packet (PKR)			52.03
Number of packets (500 grams) per batch			192
Cost per Packet (PKR)			104.06

Table 23: Raw Material Cost – Wheat Flakes

Cost Item	Consumption per batch (kg)	Cost per kg (PKR)	Cost (PKR)
Water	30	-	-
Wheat Flour	60	75	4,500
Wheat Bran	18	60	1,080
Sugar	2	110	264
Barly malt extract	8	1600	13,440
Salt	1.20	30	36.00
Total (PKR)	120		19,320
Number of packets (150 grams) per batch			640
Cost per Packet (PKR)			30.19
Number of packets (250 grams) per batch			384
Cost per Packet (PKR)			50.31
Number of packets (500 grams) per batch			192
Cost per Packet (PKR)			100.63

Table 24: Raw Material Cost - Oat Flakes

Cost Item	Consumption per batch (kg)	Cost per kg (PKR)	Cost (PKR)
Water	30	-	-
Oat Flour	90	160	14,400
Total (PKR)	120		14,400
Number of packets (150 grams) per batch			640
Cost per Packet (PKR)			22.50
Number of packets (250 grams) per batch			384
Cost per Packet (PKR)			37.50
Number of packets (500 grams) per batch			192
Cost per Packet (PKR)			75

Table 25: Raw Material Cost – Bran Flakes

Cost Item	Consumption per batch (kg)	Cost per kg (PKR)	Cost (PKR)
Water	30	-	-
Wheat Flour	54	75	4,050
Wheat Bran	24	60	1,440
Sugar	2.40	110	264.00
Barly malt extract	8	1600	13,440
Salt	1.20	30	36.00
Total (PKR)	120		19,230
Number of packets (150 grams) per batch			640
Cost per Packet (PKR)			30.05
Number of packets (250 grams) per batch			384
Cost per Packet (PKR)			50.08
Number of packets (500 grams) per batch			192
Cost per Packet (PKR)			100

Table 26: Packing Cost per Packet

Cost Item	Cost/Kg (PKR)	Consumption per packet (Grams)	Cost per packet (PKR)
Packing Cost-150 gram	800	3.0	2.4
Packing Cost-250 gram	800	4.5	3.6
Packing Cost-500 gram	800	5.0	4.0

Table 27: Box Packing Cost per Packet

Cost Item	Unit Cost (PKR)
Box Packing - 150 gram	12
Box Packing - 250 gram	15
Box Packing - 500 gram	17

Table 28: Carton Packing Cost per Carton

Cost Item	Packets per carton	No. of cartons	Unit Cost (PKR)
Cartons for Packaging-150grams	20	13,440	50
Cartons for Packaging-250grams	20	8,064	50
Cartons for Packaging-500grams	18	5,973	50

Table 29: Direct Labor Cost

Personnel	Number of Personnel	Salary Per Month (PKR)	Annual Salaries (PKR)
Production Manager	1	100,000	1,200,000
Labour Skilled	10	35,000	4,200,000
Labour-Unskilled	8	25,000	2,400,000
Mechanical Engineer	1	70,000	840,000
Total	20		8,640,000

Table 30: Machinery Maintenance Cost

Cost Item	Machinery Cost (PKR)	Rate	Total Cost (PKR)
Machinery Maintenance Cost	17,922,500	10%	1,792,250
Total (PKR)			1,792,250

Table 31: Office Vehicle Running Expenses

Cost Item	Carry Van km Per Year	Motorcycle KM Per Year	Motorcycle (PKR)	Carry Van (PKR)	Total (PKR)
Fuel cost	33,600	14,000	328,451	51,321	379,772
Mileage (KM)			15	40	-
Oil & Tuning Cost (PKR)			56,000	11,667	67,667
Oil & Tuning km			3,000	1,200	-
No of Vehicles			1	1	2

Yearly Cost			384,451	62,987	447,438
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Table 32: Other Consumables Cost

Cost Item	Unit of Measurement	No.	Unit Cost (PKR)	Total Cost (PKR)
Soap	Units	60	40	2,400
Detergent	Kgs	12	180	2,160
Sponge	Units	24	60	1,440
Mop	Units	10	200	2,000
Stainless Steel Sprial	Units	24	50	1,200
Liquid Soap	Liters	12	180	2,160
Phenyle	Liters	24	190	4,560
Disposable Gloves (pack of 100)	Units	50	250	12,500
Disposable Hairnet Caps	Units	4,000	60	240,000
Total (PKR)				268,420

Table 33: Variable Cost Assumptions

Description of Costs	Rational
Fuel Cost	15%of utilities cost
Water expense	2%of total raw material cost
Communications expense (phone,mail, internet, etc.)	7%of Management staff expense
Office expenses (stationery, entertainment, etc.)	8%of Management staff expense

9.5. Fixed Cost Estimate

Table 34 shows the estimated fixed cost of the project.

Table 34: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Management Staff	12,540,000
Administration benefits expense	1,059,000
Building rental expense	3,000,000
Marketing and Promotional expense	16,087,764
Depreciation expense	3,320,720
Indirect Utilities	15,448

Amortization of pre-operating costs	209,651
Bad debt expense	536,259
License,Permits,etc.	25,000
Total	36,793,842

Table 35: Management Staff

Personnel	Number of Personnel	Salary Per Month (PKR)	Annual Salaries (PKR)
Sales and Marketing Manager	1	70,000	840,000
Sales and Marketing Staff	3	45,000	1,620,000
Procurement Manager	1	60,000	720,000
Procurement Officer	2	45,000	1,080,000
Mechanical Technician	1	45,000	540,000
Food Technologist	1	70,000	840,000
Quality Controller	1	60,000	720,000
Admin Manager	1	60,000	720,000
Admin Officer	2	30,000	720,000
Accounts Manager	1	60,000	720,000
Accountant	2	40,000	960,000
Store Keeper	1	25,000	300,000
Sweeper	2	20,000	480,000
Office Boy	2	20,000	480,000
Security Guard	4	25,000	1,200,000
Driver	1	30,000	360,000
Total	26		12,540,000

Table 36: Licenses, Permits Cost Details

Cost Item	No.	Total Cost (PKR)
Sindh Food Authority	1	20,000
Social Security Corporation	1	5,000
Total	2	25,000

The above charges may differ in other provinces or in federal capital area.

Table 37: Fixed Cost Assumptions

Description Costs	Rate	Rational
Administration benefits expense	5%	of Staff Salaries
Marketing and Promotional expense	15%	of revenue
Bad debt expense	0.5%	of revenue
Depreciation		
Building	10%	of cost
Machinery and Equipment/Office Equipment/Office Vehicle/Furniture & Fixture	15%	of cost

Marketing and Promotional expense is necessary due to the high competition in the market and high imports of cereal breakfast food.

9.6. Financial Feasibility Analysis

The financial feasibility analysis provides the information regarding projected Internal Rate of Return (IRR), Net Present Value (NPV) and Payback period of the study, which is shown in Table 38.

Table 38: Financial Feasibility Analysis

Description	Project
IRR	71%
NPV (PKR)	169,599,887
Payback Period (years)	2.07
Projection Years	10
Discount rate used for NPV	15%

9.7. Financial Feasibility Analysis with 50% Debt

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the study on the basis of Debt: Equity Model (50:50), which is shown in Table 39.

Table 39: Financial Feasibility Analysis with 50% Debt

Description	Project
IRR	70%
NPV (PKR)	191,609,245

Payback Period (years)	2.10
Projection Years	10
Discount rate used for NPV	13%

9.8. Human Resource Requirement

The proposed production unit shall require the workforce as provided in Table 40.

Table 40: Human Resource

Personnel	Number of Personnel	Salary Per Month (PKR)	Annual Salaries (PKR)
Production Manager	1	100,000	1,200,000
Labour Skilled	10	35,000	4,200,000
Labour-Unskilled	8	25,000	2,400,000
Mechanical Engineer	1	70,000	840,000
Sales and Marketing Manager	1	70,000	840,000
Sales and Marketing Staff	3	45,000	1,620,000
Procurement Manager	1	60,000	720,000
Procurement Officer	2	45,000	1,080,000
Mechanical Technician	1	45,000	540,000
Food Technologist	1	70,000	840,000
Quality Controller	1	60,000	720,000
Admin Manager	1	60,000	720,000
Admin Officer	2	30,000	720,000
Accounts Manager	1	60,000	720,000
Accountant	2	40,000	960,000
Sweeper	2	20,000	480,000
Office Boy	2	20,000	480,000
Security Guard	4	25,000	1,200,000
Driver	1	30,000	360,000
Sweeper	2	20,000	480,000
Total	46		21,180,000

10. CONTACT DETAILS

The contact details of all the major suppliers of machinery and equipment and raw material are given in Table 41.

Table 41: Contact Details

Name of Supplier	Supplies	Contact	Website/ Email
Foshan Suntech Machinery Co.,Ltd	Packing Machinery	86 0757 86604198	www.sunchonpack.en.alibaba.com
Jinan Sunrising Machinery	Production line	86 1861 5206445	cy@chenyangjixie.com
T & L Group	Analyzer SGrain	372 5597 8586	www.tlg.ee/sgrain.htm
SMI International (Karachi)	Flour	021 34942799	www.smiinternational.com.pk
Sunny Flour Mills (Lahore)	Flour	042 35758233	www.sunnyflour.com
Chiltan Flour Mills (Quetta)	Flour	081 2892377	
SFM Mills (Peshawar)	Flour	091 2602373	www.sfmills.com
Sihala Flour & General Mills (Pvt.) Limited (Islamabad)	Flour	051 4433526	www.sihalaflourmills.com

11. USEFUL LINKS

Table 42: Useful Links

Name of Organization	E-mail Address
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Government of Pakistan	www.pakistan.gov.pk
Trade Development Authority of Pakistan	www.tdap.gov.pk
Federal Board of Revenue	www.fbr.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.kp.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Azad Jammu and Kashmir	www.ajk.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Punjab Food Authority	www.pfa.gop.pk
Sindh Food Authority	www.sfa.gos.pk
Food Department Government of Balochistan	www.balochistan.gov.pk/departments/food-department/
Khyber Pakhtunkhwa Food Safety & Halal Food Authority	www.kpfsa.gov.pk
Small Industries Development Board, Khyber Pakhtunkhwa	www.sidbkgp.com
Sindh Small Industries Corporation	www.ssic.gos.pk
Punjab Small Industries Corporation	www.psic.gop.pk
Pakistan Food Association	www.facebook.com/pfa.com.pk

12. ANNEXURES

12.1. Income Statement

Calculations										
Income Statement										SMEDA
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue										
Corn Flakes	64,400,000	81,887,680	99,368,676	119,738,216	143,424,052	170,913,519	202,761,516	239,599,524	267,089,302	297,003,303
Wheat Flakes	29,662,640	37,717,791	45,769,173	55,151,378	66,061,069	78,722,432	93,392,508	110,359,474	123,021,332	136,799,722
Oat Flakes	9,325,120	11,857,696	14,388,540	17,338,044	20,767,748	24,747,910	29,360,480	34,693,935	38,674,531	43,006,078
Bam Flakes	3,864,000	4,913,494	5,962,195	7,184,169	8,605,535	10,254,403	12,166,088	14,376,098	16,025,358	17,820,198
Total Revenue	107,251,760	136,376,662	165,488,583	199,411,807	238,858,404	284,638,264	337,680,592	399,029,031	444,810,523	494,629,301
Cost of sales										
Raw Material Cost-Corn Flakes	13,403,250	17,042,873	20,681,106	24,920,516	29,850,131	35,571,376	42,199,740	49,866,651	55,587,961	61,813,813
Raw Material Cost-Wheat Flakes	9,072,350	11,536,028	13,998,550	16,868,107	20,204,848	24,077,339	28,564,200	33,753,562	37,626,205	41,840,340
Raw Material Cost-Oat Flakes	1,932,000	2,456,705	2,981,051	3,592,136	4,302,710	5,127,329	6,082,973	7,187,970	8,012,679	8,910,099
Raw Material Cost-Bam Flakes	1,289,208	1,639,367	1,989,261	2,396,968	2,871,201	3,421,339	4,059,165	4,796,525	5,346,794	5,945,635
Packing Cost	1,586,816	1,997,161	2,398,790	2,861,057	3,392,086	4,001,016	4,698,230	5,495,204	6,063,249	6,673,616
Box Packing Cost	7,161,280	9,013,158	10,825,709	12,911,912	15,308,438	18,056,539	21,203,046	24,799,786	27,363,364	30,117,943
Carton Packaging	1,316,622	1,657,094	1,990,338	2,373,893	2,814,501	3,319,749	3,898,240	4,559,513	5,030,834	5,537,272
Direct Utilities Cost	1,318,974	1,573,708	1,863,710	2,193,274	2,567,181	2,990,756	3,469,921	4,011,264	4,573,748	4,768,989
Direct Labor	8,640,000	9,478,080	10,397,454	11,406,007	12,512,389	13,726,091	15,057,522	16,518,102	18,120,358	19,878,032
Machinery Maintenance - Cost	1,792,250	1,972,670	2,171,252	2,389,825	2,630,400	2,895,194	3,186,643	3,507,432	3,860,514	4,249,139
Fuel Cost-Generator	197,846	259,819	338,673	438,684	565,160	724,688	925,435	1,177,506	1,413,161	1,695,977
Water expense	513,936	712,554	942,797	1,238,720	1,617,840	2,102,135	2,719,234	3,503,622	4,258,536	5,163,423
Gas expense	7,070,700	7,777,770	8,484,840	9,191,910	9,898,980	10,606,050	11,313,120	12,020,190	12,020,190	12,020,190
Total cost of sales	55,295,232	67,116,988	79,063,531	92,783,008	108,535,865	126,619,602	147,377,469	171,197,326	189,077,594	208,614,468
Gross Profit	51,956,528	69,259,674	86,425,052	106,628,799	130,322,539	158,018,663	190,303,122	227,831,704	255,732,929	286,014,833
General administration & selling expenses										
Management Staff	12,540,000	13,756,380	15,090,749	16,554,551	18,160,343	19,921,896	21,854,320	23,974,189	26,299,686	28,850,755
Administration benefits expense	1,059,000	1,161,723	1,274,410	1,398,028	1,533,637	1,682,399	1,845,592	2,024,615	2,221,002	2,436,439
Building rental expense	3,000,000	3,300,000	3,630,000	3,993,000	4,392,300	4,831,530	5,314,683	5,846,151	6,430,766	7,073,843
Indirect Utilities	15,448	18,431	21,828	25,688	30,067	35,028	40,640	46,980	51,226	55,855
Other Consumables	268,420	295,441	325,182	357,917	393,947	433,605	477,254	525,298	578,178	636,381
License,Permits,etc.	25,000	27,517	30,287	33,336	36,691	40,385	44,450	48,925	53,850	59,271
Communications expense (phone,mail, internet, etc.)	877,800	962,947	1,056,352	1,158,819	1,271,224	1,394,533	1,529,802	1,678,193	1,840,978	2,019,553
Office vehicles running expense-Carry Van	384,451	419,193	457,074	498,378	543,415	592,521	646,066	704,448	768,107	837,518
Office vehicles running expense-motorcycle	62,987	69,328	76,307	83,988	92,443	101,749	111,992	123,266	135,675	149,333
Office expenses (stationery, entertainment, etc.)	1,003,200	1,100,510	1,207,260	1,324,364	1,452,827	1,593,752	1,748,346	1,917,935	2,103,975	2,308,060
Marketing and Promotional expense	16,087,764	20,456,499	24,823,287	29,911,771	35,828,761	42,695,740	50,652,089	59,854,355	66,721,578	74,194,395
Depreciation expense	3,320,720	3,320,720	3,320,720	3,320,720	3,320,720	3,320,720	2,233,283	6,177,348	6,177,348	6,177,348
Amortization of pre-operating costs	209,651	209,651	209,651	209,651	209,651	-	-	-	-	-
Bad debt expense	536,259	681,883	827,443	997,059	1,194,292	1,423,191	1,688,403	1,995,145	2,224,053	2,473,147
Subtotal	39,390,700	45,780,223	52,350,550	59,867,270	68,460,318	78,067,049	88,186,920	104,916,849	115,606,421	127,271,898
Operating Income	12,565,828	23,479,451	34,074,502	46,761,529	61,862,220	79,951,613	102,116,203	122,914,856	140,126,508	158,742,935
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	4,480,625	-	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	401,500	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	291,813	-	-	-
Earnings Before Interest & Taxes	12,565,828	23,479,451	34,074,502	46,761,529	61,862,220	79,951,613	107,290,140	122,914,856	140,126,508	158,742,935
Subtotal	-	-	-	-	-	-	-	-	-	-
Earnings Before Tax	12,565,828	23,479,451	34,074,502	46,761,529	61,862,220	79,951,613	107,290,140	122,914,856	140,126,508	158,742,935
Tax	3,518,040	7,337,808	11,046,076	15,486,535	20,771,777	27,103,065	36,671,549	42,140,200	48,164,278	54,680,027
NET PROFIT/(LOSS) AFTER TAX	9,047,788	16,141,643	23,028,426	31,274,994	41,090,443	52,848,549	70,618,591	80,774,656	91,962,230	104,062,908

12.2. Balance Sheet

Calculations	SMEDA										
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	1,000,000	4,696,712	11,962,330	19,486,867	27,409,657	35,912,122	44,967,523	71,570,344	152,746,923	245,012,300	389,678,120
Accounts receivable	-	11,491,260	14,611,785	17,730,920	21,365,551	25,591,972	30,496,957	36,180,063	42,753,110	47,658,270	38,607,116
Equipment spare part inventory	298,708	360,231	434,426	523,902	631,807	761,936	918,868	1,108,121	1,336,354	1,611,594	-
Raw material inventory-Corn Flakes	1,116,938	1,563,210	2,087,873	2,769,129	3,650,802	4,788,489	6,252,640	8,132,417	9,978,058	12,212,557	-
Raw material inventory-Wheat Flakes	756,029	1,058,110	1,413,232	1,874,358	2,471,141	3,241,204	4,232,293	5,504,642	6,753,917	8,266,398	-
Raw material inventory-Oat Flakes	161,000	225,334	300,954	399,153	526,240	690,222	901,300	1,172,238	1,438,279	1,760,369	-
Raw material inventory-Bam Flakes	107,434	150,366	200,827	266,347	351,160	460,568	601,437	782,233	959,751	1,174,679	-
Finished goods inventory-Corn Flakes	-	345,595	419,481	494,147	579,894	678,349	791,373	921,109	1,069,983	1,181,735	1,303,840
Finished goods inventory-Wheat Flakes	-	241,917	293,614	345,854	405,846	474,729	553,961	644,742	748,913	827,132	912,597
Finished goods inventory-Oat Flakes	-	69,119	83,874	98,780	115,899	135,554	158,275	184,188	213,922	236,264	260,677
Finished goods inventory-Bam Flakes	-	34,560	41,880	49,390	57,883	67,777	79,137	92,008	106,961	118,132	130,338
Total Current Assets	3,440,109	20,236,415	31,850,276	44,038,848	57,565,881	72,802,923	89,953,763	126,292,105	218,106,171	320,059,431	430,892,689
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	584,075	525,668	467,260	408,853	350,445	292,038	233,630	175,223	116,815	58,408	-
Machinery & equipment	17,922,500	15,234,125	12,543,750	9,857,375	7,169,000	4,480,625	1,792,250	33,974,082	28,877,970	23,781,858	18,685,745
Furniture & fixtures	1,053,000	895,050	737,100	579,150	421,200	263,250	103,300	1,996,078	1,696,666	1,397,255	1,097,843
Office vehicles	1,167,250	992,163	817,075	641,988	466,900	291,813	116,725	1,778,425	1,511,661	1,244,897	978,134
Office equipment	1,606,000	1,365,100	1,124,200	883,300	642,400	401,500	160,600	3,044,351	2,587,698	2,131,046	1,674,393
Total Fixed Assets	23,082,825	19,762,105	16,441,385	13,120,665	9,799,945	6,479,225	3,158,505	41,718,158	35,540,810	29,363,463	23,186,115
<i>Intangible assets</i>											
Pre-operation costs	1,048,255	838,604	628,953	419,302	209,651	-	-	-	-	-	-
Total Intangible Assets	1,048,255	838,604	628,953	419,302	209,651	-	-	-	-	-	-
TOTAL ASSETS	27,571,189	40,837,124	48,920,614	57,578,815	67,575,476	79,282,148	93,112,268	168,010,263	253,646,981	349,422,893	454,078,804
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	8,742,041	11,016,657	13,327,028	16,026,492	19,176,840	22,849,745	27,129,149	31,991,211	35,804,893	36,397,896
Total Current Liabilities	-	8,742,041	11,016,657	13,327,028	16,026,492	19,176,840	22,849,745	27,129,149	31,991,211	35,804,893	36,397,896
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	27,571,189	27,571,189	27,571,189	27,571,189	27,571,189	27,571,189	27,571,189	27,571,189	27,571,189	27,571,189	27,571,189
Retained earnings	-	4,523,894	10,332,769	16,680,598	23,977,796	32,534,119	42,691,334	113,309,925	194,084,581	286,046,811	390,109,719
Total Equity	27,571,189	32,095,083	37,903,957	44,251,786	51,548,984	60,105,308	70,262,523	140,881,114	221,655,770	313,618,000	417,680,908
TOTAL CAPITAL AND LIABILITIES	27,571,189	40,837,124	48,920,614	57,578,815	67,575,476	79,282,148	93,112,268	168,010,263	253,646,981	349,422,893	454,078,804

12.3. Cash Flow Statement

Calculations											SMEDA
Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		9,047,788	16,141,643	23,028,426	31,274,994	41,090,443	52,848,549	70,618,591	80,774,656	91,962,230	104,062,908
Add: depreciation expense		3,320,720	3,320,720	3,320,720	3,320,720	3,320,720	3,320,720	2,233,283	6,177,348	6,177,348	6,177,348
amortization of pre-operating costs		209,651	209,651	209,651	209,651	209,651	-	-	-	-	-
Accounts receivable		(11,491,260)	(3,120,525)	(3,119,134)	(3,634,631)	(4,226,421)	(4,904,985)	(5,683,107)	(6,573,047)	(4,905,160)	9,051,154
Equipment spare parts	(298,708)	(61,523)	(74,195)	(89,476)	(107,905)	(130,129)	(156,931)	(189,253)	(228,233)	(275,240)	1,611,594
Raw material inventory-Corn Flakes	(1,116,938)	(446,273)	(524,663)	(681,256)	(881,672)	(1,137,687)	(1,464,151)	(1,879,777)	(1,845,640)	(2,234,500)	12,212,557
Raw material inventory-Wheat Flakes	(756,029)	(302,081)	(355,122)	(461,126)	(596,783)	(770,062)	(991,089)	(1,272,349)	(1,249,275)	(1,512,481)	8,266,398
Raw material inventory-Oat Flakes	(161,000)	(64,334)	(75,619)	(98,199)	(127,088)	(163,982)	(211,078)	(270,937)	(266,041)	(322,090)	1,760,369
Raw material inventory-Bam Flakes	(107,434)	(42,932)	(50,461)	(65,520)	(84,813)	(109,408)	(140,869)	(180,796)	(177,518)	(214,928)	1,174,679
Finished goods inventory-Corn Flakes		(345,595)	(73,886)	(74,666)	(85,747)	(98,455)	(113,023)	(129,737)	(148,874)	(111,752)	(122,105)
Finished goods inventory-Wheat Flakes		(241,917)	(51,697)	(52,240)	(59,992)	(68,883)	(79,232)	(90,781)	(104,171)	(78,218)	(85,465)
Finished goods inventory-Oat Flakes		(69,119)	(14,754)	(14,907)	(17,119)	(19,655)	(22,720)	(25,913)	(29,734)	(22,343)	(24,413)
Finished goods inventory-Bam Flakes		(34,560)	(7,320)	(7,510)	(8,493)	(9,894)	(11,360)	(12,871)	(14,953)	(11,171)	(12,206)
Accounts payable		8,742,041	2,274,615	2,310,372	2,699,464	3,150,348	3,672,905	4,279,404	4,862,062	3,813,682	593,003
Cash provided by operations	(2,440,109)	8,220,606	17,598,387	24,205,135	31,900,585	41,036,585	51,746,735	67,395,756	81,176,579	92,265,377	144,665,820
<i>Financing activities</i>											
Issuance of shares	27,571,189	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	27,571,189	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(24,131,080)	-	-	-	-	-	-	(40,792,936)	-	-	-
Cash (used for) / provided by investing activities	(24,131,080)	-	-	-	-	-	-	(40,792,936)	-	-	-
NET CASH	1,000,000	8,220,606	17,598,387	24,205,135	31,900,585	41,036,585	51,746,735	26,602,820	81,176,579	92,265,377	144,665,820

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 43: Operating Cost Assumptions

Description	Details
Operating costs growth rate	10.07%
Inflation rate	10.07%
Electricity growth rate	9.04%
Water price growth rate	9.04%
Gas price growth rate	9.04%
Wage growth rate	9.70%
Office equipment price growth rate	9.57%
Office vehicles price growth rate	6.20%

13.2. Revenue Assumptions

Table 44: Revenue Assumptions

Description	Details
Sale price growth rate	11.2%
Capacity utilization	50%
Capacity utilization growth rate	5%
Maximum capacity	85%

13.3. Financial Assumptions

Table 45: Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate	15%

13.4. Cash Flow Assumptions

Table 46: Cash Flow Assumptions

Description	Days
Accounts receivable cycle	30
Accounts payable cycle	60

Small and Medium Enterprises Development Authority

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4th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road, Lahore
Tel: (92 42) 111 111 456, Fax: (92 42) 36304926-7

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REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
3 rd Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road Lahore, Tel: (042) 111-111-456 Fax: (042) 36304926-7 helpdesk.punjab@smeda.org.pk	5 TH Floor, Bahria Complex II, M.T. Khan Road, Karachi. Tel: (021) 111-111-456 Fax: (021) 5610572 helpdesk-khi@smeda.org.pk	Ground Floor State Life Building The Mall, Peshawar. Tel: (091) 9213046-47 Fax: (091) 286908 helpdesk-pew@smeda.org.pk	Bungalow No. 15-A Chaman Housing Scheme Airport Road, Quetta. Tel: (081) 831623, 831702 Fax: (081) 831922 helpdesk-qta@smeda.org.pk