



Pre-feasibility Study

PRODUCTION UNIT FOR MACARONI, SPAGHETTI AND NOODLES

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

Table of Contents

1. DISCLAIMER	4
2. EXECUTIVE SUMMARY	5
3. INTRODUCTION TO SMEDA	6
4. PURPOSE OF THE DOCUMENT	7
5. BRIEF DESCRIPTION OF PROJECT & Products	7
5.1. Machinery and Equipment	9
5.2. Process Flow of Production Unit for Macaroni, Spaghetti and Noodles	16
5.3. Installed and Operational Capacities	19
6. CRITICAL FACTORS	21
7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT	21
8. POTENTIAL TARGET MARKETS/Customers	21
9. PROJECT COST SUMMARY	23
9.1. Initial Project Cost	23
9.1.1. Land	23
9.1.2. Building / Infrastructure	24
9.1.3. Machinery and Equipment	24
9.1.4. Office Equipment	25
9.1.5. Furniture and Fixtures	26
9.1.6. Vehicles	26
9.1.7. Pre-Operating Costs	26
9.2. Breakeven Analysis	27
9.3. Revenue Generation	27
9.4. Variable Cost Estimate	28
9.5. Fixed Cost Estimate	32
9.6. Financial Feasibility Analysis	34
9.7. Financial Feasibility Analysis with 50% Debt	34
9.8. Human Resource Requirement	34
10. CONTACT DETAILS	35
11. USEFUL LINKS	36
12. ANNEXURES	38
12.1. Income Statement	38
12.2. Balance Sheet	39
12.3. Cash Flow Statement	40
13. KEY ASSUMPTIONS	41
13.1. Operating Cost Assumptions	41

13.2. Revenue Assumptions	41
13.3. Financial Assumptions	41
13.4. Cash Flow Assumptions	41
13.5. Debt Related Assumptions.....	42

Table of Tables

Table 1: Installed and Operational Capacity	20
Table 2: Initial Project Cost estimates.....	23
Table 3: Breakup of Space Requirement	24
Table 4: Building Renovation Cost	24
Table 5: Machinery Cost Details	24
Table 6: Quality Assurance Kit.....	25
Table 7: Office Equipment Cost Details.....	25
Table 8: Furniture & Fixtures Cost Details	26
Table 9: Office Vehicle Cost Details.....	26
Table 10: Pre-Operating Cost Details	26
Table 11: Breakeven Analysis.....	27
Table 12: Revenue Details	27
Table 13: Variable Cost Estimate	28
Table 14: Raw Material Cost per Packet.....	29
Table 15: Raw Material Per Packet-Egg Noodles	29
Table 16: Direct Labor Cost.....	30
Table 17: Machinery Maintenance Cost.....	30
Table 18: Packing Cost	30
Table 19: Box Packing Cost	31
Table 20: Carton Packing Cost	31
Table 21: Vehicle Maintenance Cost	31
Table 22: Variable Cost Assumption.....	32
Table 23: Fixed Cost Estimate	32
Table 24: Management Staff	32
Table 25: Other Consumables	33
Table 26: License, Permits, etc.	33
Table 27: Fixed Cost Assumption.....	33
Table 28: Financial Feasibility Analysis	34
Table 29: Financial Feasibility Analysis with 50% Debt	34
Table 30: Human Resource.....	35
Table 31: Contact Details.....	35
Table 32: Useful Links	36
Table 33: Operating Cost Assumptions	41
Table 34: Revenue Assumptions.....	41
Table 35: Financial Assumptions.....	41
Table 36: Cash Flow Assumptions.....	41
Table 37: Debt Related Assumptions	42

Table of Figures

Figure 1: Types of Macaroni.....	8
Figure 2: Spaghetti.....	8
Figure 3: Noodles.....	9
Figure 4: Dough Mixer.....	10
Figure 5: Macaroni, Spaghetti and Noodle Making Machine	11
Figure 6: Dies for Macaroni	11
Figure 7: Die for Spaghetthis.....	11
Figure 8: Die for Noodles	12
Figure 9: Pasta Dryer.....	12
Figure 10: Platform Trolley	13
Figure 11: Plastic Basket	13
Figure 12: Plastic Bucket	14
Figure 13: Stainless Steel Dough Cutter	14
Figure 14: Digital Flour Moisture Meter	15
Figure 15: Flour Powder Color Analysis Machine.....	15
Figure 16: Automatic Packing Machine	16
Figure 17 Process Flow of Production Unit for Macaroni, Spaghetti and Noodles.....	17
Figure 18: Single Screw Extruder.....	18
Figure 19: Final Packed Products of Macaroni, Spaghetti and Noodles.....	19
Figure 20: Pakistan's Exports of Pasta.....	22

1. DISCLAIMER

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2. EXECUTIVE SUMMARY

Pasta is a traditional Italian dish and is considered a balanced food in term of provision of healthy carbohydrates for the human body. It is typically made from an unleavened¹ dough of wheat flour, mixed with water and salt, and formed into sheets or other shapes, and then cooked by boiling or baking. There are different types of pastas; more common being macaroni, spaghetti and noodles.

For the proposed production unit, semolina flour will be purchased. Semolina (*Sooji*) is a coarse flour made from durum wheat, a hard type of wheat. When ground into a flour, durum wheat is known as semolina and used all over the world in bread, pasta, and porridge. This flour is darker and more golden in color than the more common all-purpose flour.

Macaroni is dry pasta, shaped like narrow tubes. Made with semolina (*Sooji*), water and salt. Macaroni is commonly cut in short lengths. Different types of macaroni include elbow shaped, spiral shaped, shell shaped and ring-shaped macaroni. Spaghetti is a long, thin, solid, cylindrical pasta. Spaghetti is made of semolina (*Sooji*) and water and is sometimes enriched with vitamins and minerals.

Noodles represent a food made from unleavened dough which is flat and cut, stretched or extruded, into long strips or strings. Noodles are usually cooked in boiling water, sometimes with the addition of cooking oil or salt. There are many types of noodles that are produced throughout the world, however some more common types are egg noodles, ramen noodles, udon noodles and soba noodles. Although both spaghetti and noodles are long and cylindrical in shape, however, noodles are usually thinner than spaghettis.

This “Pre-feasibility Document” provides details for setting up a “Production Unit for Macaroni, Spaghetti and Noodles” (hereinafter referred to as proposed project). The products of the proposed project include Macaroni, Spaghetti and Noodles which can then be cooked with other ingredients to make different types of ready-to-eat pastas. The increasing consumption trend of Macaroni, Spaghetti and Noodles makes the proposed project profitable.

This unit may be established in industrial areas of major cities like Lahore, Karachi, Islamabad, Peshawar, Quetta, Faisalabad or medium cities, such as Multan, Rawalpindi, Hyderabad, Bahawalpur, Sargodha, Sukkur, Sheikhpura, Mardan, Sialkot, Lasbela, Gujranwala, etc. These cities have been proposed due to availability of good industrial infrastructure and strong supply chain linkages. Availability of skilled and low-cost labor is also a major factor in suggesting these locations.

The production unit will be set up in a rented building with an area of 2,035 square feet (9 Marla). The project requires a total investment of PKR 8.25 million. This includes capital investment of PKR 6.76 million and working capital of PKR 1.49 million. It is

¹ Unleavened bread is any of a wide variety of breads which are prepared without using raising agents such as yeast

proposed that the project shall be financed through 100% equity. The proposed business will have maximum capacity of producing 179,200 kg of different pasta products per year. This translates into 400,213 packets which includes 89,600 400-gram packets of macaroni, 35,840 1-kg packets of macaroni, 59,733 450-gram packets of spaghetti, 17,920 1-kg packets of spaghetti, 71,680 250-gram packets of noodles, 35,840 500-gram packets of noodles, 71,680 250-gram packets of egg noodles and 17,920 500-gram packets of egg noodles.

The project is assumed to attain 60% capacity utilization during the first year of operations; which is equal to of 107,520 kg of pasta product. In terms of packets, it translates into a total of 240,128 packets; which includes 53,760 400-gram packets of macaroni, 21,504 1-kg packets of macaroni, 35,840 450-gram packets of spaghetti, 10,752 1-kg packets of spaghetti, 43,008 250-gram packets of noodles, 21,504 500-gram packets of noodles, 43,008 250-gram packets of egg noodles and 10,752 500-gram packets of egg noodles.

The Net Present Value (NPV) of the proposed project is PKR 39.89 million with an Internal Rate of Return (IRR) of 58% and a Payback period of 2.64 years. Further, this project is expected to generate Gross Annual Revenues of PKR 29.65 million during 1st year, Gross Profit (GP) ratio ranging from 36% to 51% and Net Profit (NP) ratio ranging from 5% to 22% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 48% (86,406 kg, which is equal to 192,973 packets) with annual breakeven revenue of PKR 23.83 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 45.47 million, Internal Rate of Return (IRR) of 57% and Payback period of 2.67 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 5% to 22% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 49% (87,356 kg which is equal to 195,095 packets) with breakeven revenue of PKR 24.09 million.

The proposed project will provide employment opportunities to 18 people, working in one 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 proposed project may be established as a "Sole-proprietorship" or "Partnership".

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 for Macaroni, Spaghetti and Noodles". This document provides a general understanding of the business with the intention of supporting them in making informed 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

Pasta is a traditional Italian dish and is considered a balanced food in term of provision of healthy carbohydrates for the human body. Pasta is typically made from an

unleavened dough of semolina (sooji) mixed with water and salt, and formed into sheets or other shapes. It is then cooked by boiling or baking. There are different types of pastas; more common being macaroni, spaghetti and noodles. This document provides details for establishing a production unit of macaroni, spaghetti and noodles.

In Pakistan, macaroni, spaghetti and noodles were introduced around three decades ago. Although these products represent a complete meal, however, previously, these products were eaten only as snacks in Pakistan. With the passage of time and rising awareness, these products gained popularity as a complete meal in homes as well as in restaurants. People can make different kinds of dishes with these pasta products as per their taste preferences by adding vegetables, chicken and/or other food ingredients.

Macaroni is dry pasta, shaped like narrow tubes. Macaroni is made with unleavened dough of semolina (*Sooji*), water and salt. Macaroni is commonly cut in short lengths. Different types of macaroni include elbow shaped, spiral shaped, shell shaped, and ring-shaped macaroni as shown in Figure 1. The list of dishes that can be made with macaroni is not exhaustive, however some of the dishes in this regard include macaroni and cheese carbonara, mac and cheese-stuffed shells, greens mac and cheese, creamy baked macaroni and cheese, egg macaroni salad, etc.

Figure 1: Types of Macaroni



Spaghetti is a long, thin, solid, cylindrical pasta. Spaghetti is made from unleavened dough of semolina (sooji) and water and sometimes enriched with vitamins and minerals. Figure 2 shows spaghetti.

Figure 2: Spaghetti



Noodles represent a product made from unleavened dough which is rolled flat and cut, stretched or extruded, into long strips or strings. Noodles are usually thinner than spaghetti. Noodles are usually cooked in boiling water, sometimes with cooking oil or salt added. Figure 3 shows noodles.

Figure 3: Noodles



The proposed project will require machinery and equipment; including macaroni, spaghetti and noodle making machine. The machine is made of stainless steel and has the capability of producing all three products, with a maximum capacity of 80 kg/hour. Other machinery and equipment include dough mixer having capacity of 80 kg/hour, automatic packing machine (8 bags/min), pasta dryer (150 kg/hour), platform trolley, generator (25 kw), plastic baskets, plastic buckets, and stainless-steel dough cutters (12.5 cm x15 cm).

5.1. Machinery and Equipment

The machinery and equipment used for establishing production unit for macaroni, spaghetti and noodles is described as follows:

Dough Mixer

Electric operated automatic dough mixer is also known as spiral mixer. It consists of a spiral-shaped agitator that remains stationary, while the bowl revolves around it. This specialized design makes it suitable for mixing large quantities of dough at one time. The dough mixer bowl has a processing capacity of 80 kg/hour. The holding capacity of the bowl is 40 kg and mixing time per batch is 30 minutes. However, bowls with higher capacities may also be used depending on the production requirement. Figure 4 shows dough mixer.

Figure 4: Dough Mixer**Macaroni, Spaghetti and Noodle Making Machine**

Macaroni, spaghetti and noodle making machine is an automatic machine; commonly of Chinese origin. This machine will be used for manufacturing all the three products of the proposed unit which include macaroni, spaghetti and noodles. The machine will use different dies for making different products. It has a capacity of processing 80 kg of dough per hour. This machine has four parts: inlet, main machine head, stainless steel shell and outlet (mold changing part). Inlet is a part, in which dough is inserted. It is made of food grade material which is easy to clean. Main machine head is a part in which screw is rotated with the help of electric motor placed below main head in the stainless-steel shell. Stainless steel shell covers the electric motor of the machine and outlet is a part at which a die and a rotating knife (only for macaroni) is placed to give required shape to the dough coming from inlet.

Figure 5 shows the macaroni, spaghetti and noodle making machine. Figure 6 shows dies for macaroni, Figure 7 shows die for spaghetti and Figure 8 shows die for noodles.

Figure 5: Macaroni, Spaghetti and Noodle Making Machine**Figure 6: Dies for Macaroni****Figure 7: Die for Spaghettis**

Figure 8: Die for Noodles

Pasta Dryer

Drying is the most difficult and critical step in the pasta production process. Pasta dryers are constructed with sheet metal panels 60 mm thick, including the floor, and are painted with white epoxy-allergenic paint and filled with polyurethane foam to provide better insulation and soundproofing. Heating of air can be done with electric resistors. It has a capacity of drying 125 kg/hour.

The frames for holding pasta are made of special wood and a net of food-compatible polyester. They are mounted on stainless steel carts with swivel casters for easy movement in all directions. It is equipped with 1 trolley having 25 trays (60 cm L x 120 cm W x 5 cm H). Figure 9 shows pasta dryer.

Figure 9: Pasta Dryer

Platform Trolley

Platform trolley is a trolley without shelves which is used to transfer raw materials like semolina and salt from the store to the machine area. It is also used to carry buckets from one place to another. Figure 10 shows a platform trolley.

Figure 10: Platform Trolley

**Plastic Basket**

Plastic basket is used to collect macaroni when it is extracted from the outlet of the machine. As the dough is extracted from the die in the shape of macaroni, it is collected in the basket from where it is transferred into the plastic tray which is used for drying of the product coming out of machine. Figure 11 shows a typical plastic basket.

Figure 11: Plastic Basket

**Plastic Bucket**

Plastic buckets are used to transfer flour from the sacks to the dough mixer and then the mixture of raw material from dough mixer to the machine inlet. Figure 12 shows a plastic bucket.

Figure 12: Plastic Bucket**Stainless Steel Dough Cutter**

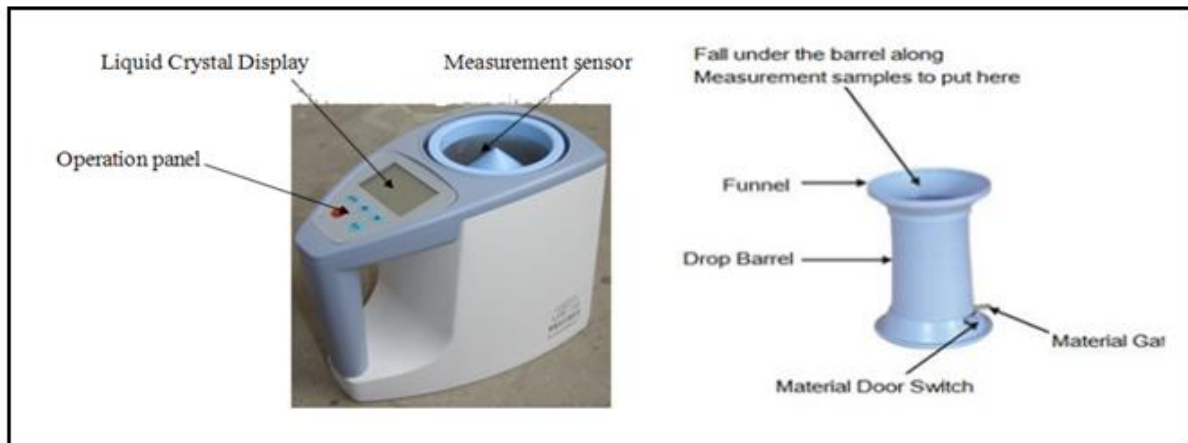
Stainless steel dough cutter is used to cut spaghetti and noodles when it is extracted from the outlet of the machine as per the required length. Figure 13 shows stainless steel dough cutter.

Figure 13: Stainless Steel Dough Cutter**Quality Assurance Kit**

The quality of semolina is measured by using quality assurance kit which consists of digital flour moisture meter and flour color powder analysis machine, which are discussed below:

Digital Flour Moisture Meter

Digital flour moisture meter is used to measure the moisture content in the flour. It works by pressing the sample automatically and applying uniform pressure on the sample. It has a measuring error of $\leq \pm 0.5$ %. The preferred semolina has a moisture content of about 13 percent. Figure 14 shows digital flour moisture meter.

Figure 14: Digital Flour Moisture Meter

Flour Powder Color Analysis Machine

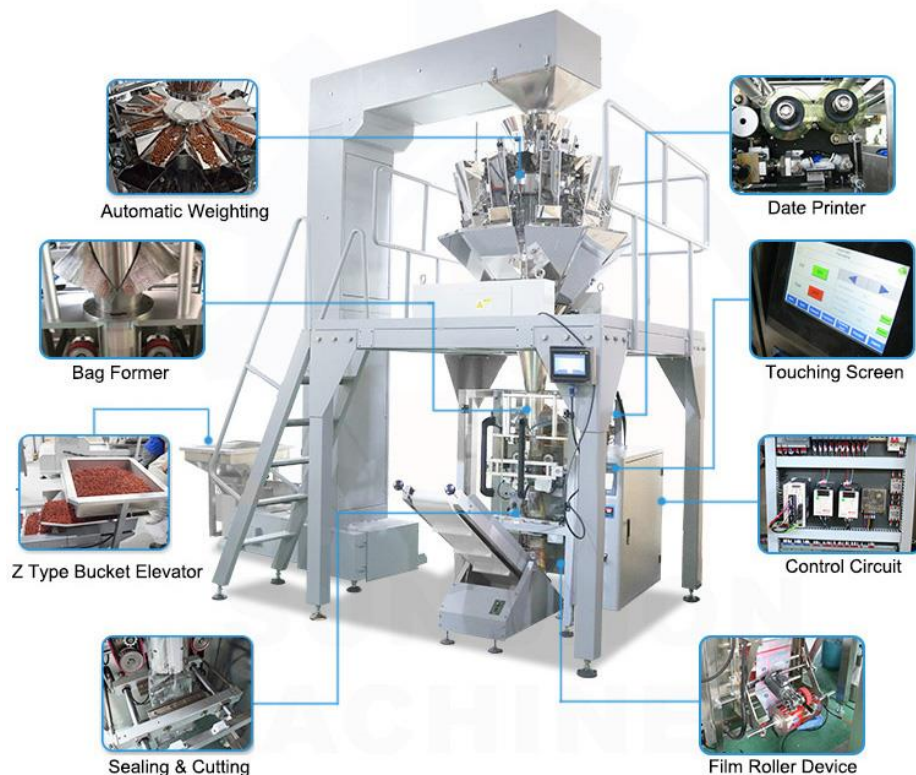
Flour powder color analysis machine is used to determine the quality of semolina by measuring yellowness attributes. The color of good quality semolina is bright yellow. Flour powder color analysis machine uses the principle of combination LED precision spectroscopy, which separates the light according to a certain wavelength interval, and adopts groups of sensor array to perform sensitive analysis. The parameters of test results are integrated with international standards. This machine has higher accuracy and is very sensitive to any colors. Figure 15 shows flour powder color analysis machine.

Figure 15: Flour Powder Color Analysis Machine

Automatic Packing Machine

Automatic packing machine is used for packing the macaroni, spaghetti and noodles. It is equipped with automatic weighing mechanism, 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 8 packets per minute. Figure 16 shows automatic packing machine.

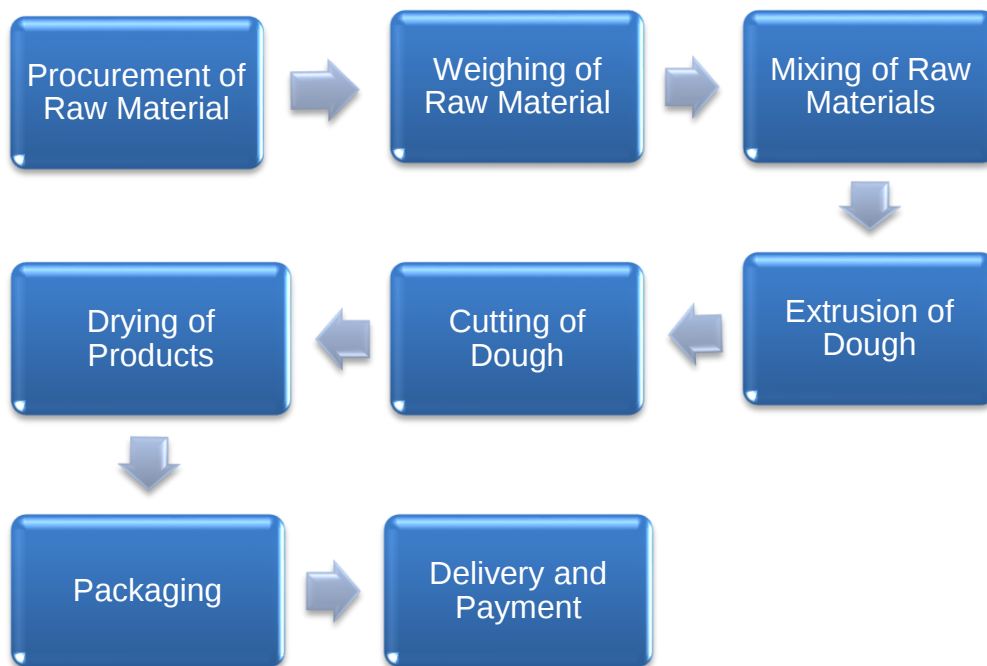
Figure 16: Automatic Packing Machine



5.2. Process Flow of Production Unit for Macaroni, Spaghetti and Noodles

The production process flow of is production unit for macaroni, spaghetti and noodles discussed in Figure 17.

Figure 17 Process Flow of Production Unit for Macaroni, Spaghetti and Noodles



Procurement of Raw Materials

For the production of macaroni, spaghetti and noodles, required raw materials include semolina and salt. For production of egg noodles, egg is also required in addition to the two mentioned raw materials. Semolina (sooji) is the main ingredient for the production of these products which can be procured locally from any flour mill or from wholesale suppliers of flour. Salt and eggs are also available easily from the local markets. The management of the proposed project will procure from reputable vendors to ensure that only quality raw materials are procured.

Quality Checking of Raw Materials

After the procurement, the quality of procured raw material is checked through the digital moisture meter and flour powder color analysis machine. After the quality is ensured, the raw material is ready for use.

Weighing of Raw Materials

Before the production of macaroni, spaghetti and noodles, the semolina (sooji), salt and water are weighed for the batch of 80 kg/hour in the given proportion, 70 kg, 2 kg and 17 liters respectively. For egg noodles, 14 liter of water, 70 kg of semolina, 3.5 kg (70 eggs of 50 grams each is used per batch) of eggs and 1 kg of salt are weighed for mixing.

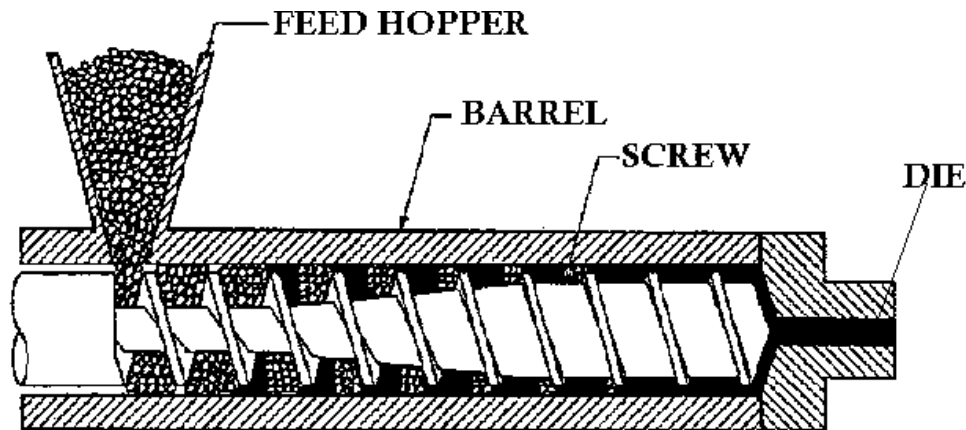
Mixing of Raw Materials

The weighed raw materials are mixed in a dough mixer of capacity 80 kg/hour. The holding capacity of dough mixer is 40 kg and mixing time is 30 minutes.

Extrusion of Dough

The mixture from dough mixer machine is added into the feeding hopper of macaroni, spaghetti and noodle making machine. Single screw extruder is present inside the barrel of the machine. The screw inside the barrel forces the material to move out of the extruder through the small opening of die. Figure 18 shows single screw extruder.

Figure 18: Single Screw Extruder



Cutting of dough

A die is placed at the outlet (mold changing part) of macaroni, spaghetti and noodle making machine which give shapes to the dough. A cutter is fitted immediately after the die which cuts the dough into pieces of macaroni. Spaghetti and noodles are cut manually through a stainless-steel dough cutter.

Drying of Products

After cutting macaroni, spaghetti and noodles, these are dried in a pasta dryer. The objective of drying is to lower the moisture content of the pasta from approximately 31 percent to 12-13 percent, so that the finished product will be hard, retain its shape, and stored without spoiling. For drying, macaroni, spaghetti and noodles are spread in frames for holding pasta. The frames are made of special wood and a net of food-compatible polyester. Macaroni, spaghetti and pasta are dried in pasta dryer through hot air produced by electricity. The dryer has the capacity of drying 125 kg/hour of macaroni, spaghetti and pasta.

Packaging

After drying, macaroni, spaghetti and noodles are ready for packing. The final product is packed in plastic packing of 250 grams, 400 grams, 450 grams, 500 grams and 1 kilogram respectively, using packing machine and is then packed in attractive box packing. According to industry practice, the expiry date of these products is normally 12 months. Expiry date is stamped on the packets which are then manually packed in the cartons by the labor. The cartons are then transferred into the factory store. Figure 19 shows final packed products of macaroni, spaghetti and noodles.

Figure 19: Final Packed Products of Macaroni, Spaghetti and Noodles**Delivery and Payment**

After packing, the products are ready for delivery. Products are delivered to the target market through carry van. The sales will be on an average credit period of 45 days.

5.3. Installed and Operational Capacities

The total production capacity of the unit is based on the production capacity of the macaroni, spaghetti and noodles machine. The proposed production unit will run for 8 hours in a day for 280 days in a year. The proposed business will have maximum capacity of producing 179,200 kg of different pasta products per year which translates into a total of 400,213 packets. These include 89,600 400-gram packets of macaroni, 35,840 1-kg packets of macaroni, 59,733 450-gram packets of spaghetti, 17,920 1-kg packets of spaghetti, 71,680 250-gram packets of noodles, 35,840 500-gram packets of noodles, 71,680 250-gram packets of egg noodles and 17,920 500-gram packets of egg noodles.

The project is assumed to attain 60% capacity utilization during the first year of operations; which is equal to 107,520 kg of pasta products and a total of 240,128 packets. These include 53,760 400-gram packets of macaroni, 21,504 1-kg packets of macaroni, 35,840 450-gram packets of spaghetti, 10,752 1-kg packets of spaghetti, 43,008 250-gram packets of noodles, 21,504 500-gram packets of noodles, 43,008 250-gram packets of egg noodles and 10,752 500-gram packets of egg noodles. It has been assumed that the operational capacity utilization of the unit will increase at the rate of 5% per annum. From utilized operational capacity of 60% during first year, the unit will attain maximum 90% of its total installed capacity in year 7. Table 1 shows details of maximum annual capacity and operational capacity utilized during 1st of operations.

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 @ 60%
Macaroni (400g)	80	640	640,000	20%	400	320	89,600	53,760
Macaroni (1kg)				20%	1,000	128	35,840	21,504
Spaghetti (450g)				15%	450	213	59,733	35,840
Spaghetti (1kg)				10%	1,000	64	17,920	10,752
Noodles (250g)				10%	250	256	71,680	43,008
Noodles (500g)				10%	500	128	35,840	21,504
Egg Noodles (250g)				10%	250	256	71,680	43,008
Egg Noodles (500g)				5%	500	64	17,920	10,752
Total						1,429	400,213	240,128

6. CRITICAL FACTORS

Before making the decision to invest in Production Unit for Macaroni, Spaghetti and Noodles, one should carefully analyze the associated risk factors. The important considerations in this regard include:

- Hiring of trained labor
- Use of good quality raw materials
- Proper cleaning of equipment to ensure proper hygiene
- Use of modern technology and machines
- Strict compliance with quality control standards
- Adequate maintenance of manufacturing machinery
- Continuous inspection of production processes and;
- Strong distribution channels

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Just like any other business, for the production unit of macaroni, spaghetti and noodles to succeed, it is necessary to clearly identify the target market. The proposed production unit has potential to provide good entrepreneurship opportunity if the business is established in metropolitan cities like Karachi, Lahore, Islamabad, Peshawar and Quetta. Other large cities like Faisalabad, Gujranwala, Sheikhpura, Hyderabad, Sukkur, Lasbela, Rawalpindi, Multan, Bahawalpur, Sargodha, Sialkot, Sahiwal, etc. These locations are suitable to establish the proposed manufacturing unit due to easy access to raw materials and availability of low-cost labor. Other important reasons of proposing larger cities for establishing of this business are access to large urban populations, strong distribution channels and availability of good infrastructure.

8. POTENTIAL TARGET MARKETS/CUSTOMERS

Due to the changing eating habits, rapid urbanization phenomenon, hectic lifestyles and cross-cultural influences, the local consumers are developing a growing preference for easy-to-cook food products that need smaller cooking times. Since pasta is a convenient and healthy food, its consumption is on the rise. Macaroni, spaghetti and noodles are the most popular products in this regard.

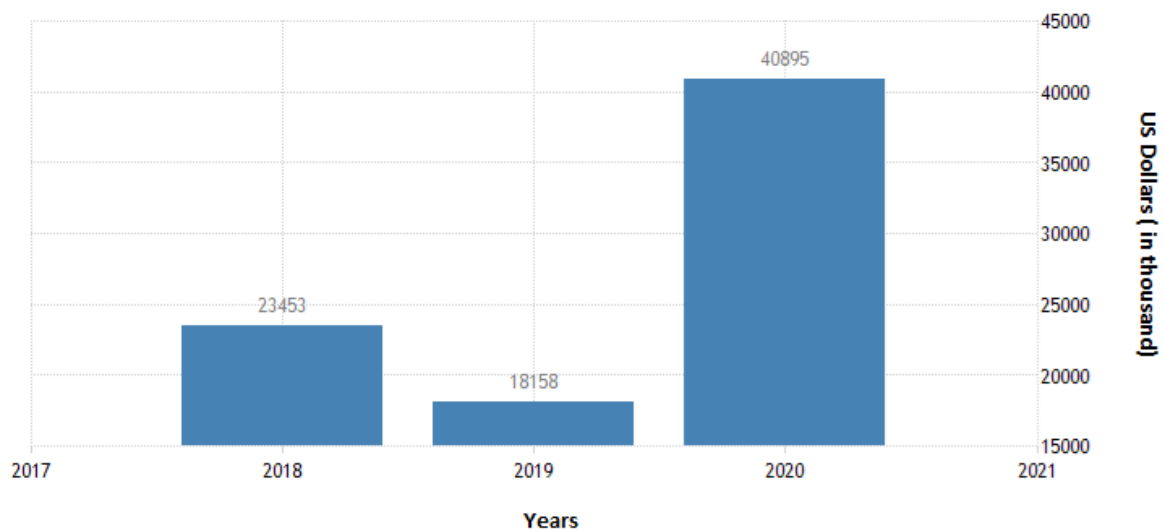
The potential target customers for macaroni, spaghetti and noodles products reside in the urban areas of the country. The products are sold on retail shops and mega stores in Pakistan. The consumers of macaroni, spaghetti and noodles products include people from every age group; however, these remain the most popular among children and teens. Therefore, a large demand of these products arises from general households. The consumers satisfy their craving for macaroni, spaghetti and noodles

by making variety of dishes in their homes. In addition to the household consumers, hotels, restaurants (especially Chinese restaurants) also constitute a large market of macaroni, spaghetti and noodles.

Global Pasta Market was USD 19.1 Billion Market in 2020 and is expected to reach USD 21.2 Billion by 2026. Global pasta industry is expected to grow at a nominal CAGR of 1.75% during the period from 2020 to 2026².

Pasta products also have a large export market. According to the United Nations COMTRADE database on international trade during 2020, Pakistan exports of pasta (spaghetti, macaroni, noodle, and lasagna) was US\$ 40.9 thousand.³ Under the HS code 1902, Pakistan exports data of pasta (spaghetti, macaroni, noodle, lasagna) is shown in Figure 20.

Figure 20: Pakistan's Exports of Pasta



In Pakistan, a number of large formal units and small cottage level units are working to produce different types of Pastas. These units are operating in all the major cities of Pakistan. The formal units of pasta are targeting the large retail sector, whereas the small cottage units are targeting wholesale sector. The present supply of the pasta is sufficient to fulfill the current demand of Pakistani market, considering the fact that Pakistan is net exporter of pasta products. However, with the growing market size, there remains a need to increase the supply of these products for the local consumers.

Some of the popular manufacturers of pasta products in Pakistan are Bake Parlor, Kolson, Knorr, Fauji Infraavest Foods, Marios, Arbella and Italia. Except Fauji Infraavest Foods, all the other manufacturers are multinational companies.

² www.prnewswire.com/news-releases/global-21-2-bn-pasta-market-to-2026--

³ <https://tradingeconomics.com/pakistan/exports/suriname/casta-prepared-couscous-prepared>

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of manufacturing macaroni, spaghetti and noodles. 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 2 provides fixed and working capital requirements for establishment of production unit for macaroni, spaghetti and noodles.

Table 2: Initial Project Cost estimates

Particulars	Cost (PKR)	Reference
Land		9.1.1
Building / Infrastructure	409,045	9.1.2
Machinery & equipment	3,043,000	9.1.3
Furniture & fixtures	510,000	9.1.5
Office vehicles	1,167,250	0
Office equipment	985,000	9.1.4
Security against building	390,000	0
Pre-operating costs	255,517	9.1.7
Total Capital Cost – (A)	6,759,812	
Working Capital		
Equipment spare part inventory	57,056	
Raw Material Inventory	434,135	
Cash	1,000,000	
Total Working Capital (B)	1,491,191	
Total Project Cost - (A+B)	8,251,003	

9.1.1. Land

The proposed Production Unit for Macaroni, Spaghetti and Noodles will be established in a rented building. Suitable location for setting up of unit like this can be easily found on rent. Therefore, no land cost has been added to the project cost. Total space requirement for the proposed project has been estimated as 2,035 sq. feet (9 Marla).

The breakup of the space requirement is provided in Table 3.

Table 3: Breakup of Space Requirement

Description	% Break-Up	Area (Sq. Feet)
Office Area	18%	360
Store	20%	400
Production Area	43%	870
Quality Assurance Laboratory	11%	225
Washrooms	18%	360
Total Area	100%	2,035

9.1.2. Building / Infrastructure

The production unit for macaroni, spaghetti and noodles will be set up in a rented building of 2,035 sq. feet (9 Marla). Industrial electricity connection having load up to 16-17 KW is required for the proposed project. There will be no cost of building construction; however, building renovation cost is included in the capital investment. Building rent of PKR 130,000 is included in the operating cost. Table 4 provides details of renovation cost.

Table 4: Building Renovation Cost

Cost Item	Unit of Measurement	Total Units	Cost/Unit (PKR)	Total Cost (PKR)
Paint Cost	Liter	48	500	24,215
Labour Cost	Sq. Feet	4,843	10	48,430
Blinds	No.	6	3,000	18,000
Curtains	No.	2	8,000	16,000
Tiles	Sq. Feet	870	120	104,400
Glass Partitions	Sq. Feet	360	550	198,000
Total (PKR)				409,045

9.1.3. Machinery and Equipment

Table 5 provides details of machinery and equipment for the proposed project.

Table 5: Machinery Cost Details

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Macaroni, Spaghetti and Noodle Making Machine (80kg/h)	1	300,000	300,000
Dough Mixer (40kg/30 min)	1	100,000	100,000
Automatic Packing machine (8 bags/min)	1	1,300,000	1,300,000

Pasta Dryer	1	300,000	300,000
Electronic Weighing Scale (100 kg)	1	11,000	11,000
Platform Trolley	2	30,000	120,000
Generator (25 KW) (Diesel)	1	300,000	300,000
Plastic Basket	30	700	21,000
Plastic Bucket	5	500	2,500
Stainless Steel Dough Cutter (12.5x15cm)	5	700	3,500
Deep Freezer (DC Inverter)	1	60,000	60,000
Working Tables	5	10,000	50,000
Quality Assurance kit	1	475,000	475,000
Total	55		3,043,000

Table 6: Quality Assurance Kit

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Digital Flour Moisture Meter	1	25,000	25,000
Flour Powder Color Analysis Machine	1	450,000	450,000
Total	2		475,000

9.1.4. Office Equipment

Table 7 shows details of equipment cost required for the production unit.

Table 7: Office Equipment Cost Details

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Laptop	3	80,000	240,000
Printer	2	40,000	80,000
LED/LCD (Surveillance)	2	40,000	80,000
Water Dispenser	2	20,000	40,000
Ceiling Fan	10	5,000	50,000
Wi-Fi / Internet Routers	1	5,000	5,000
Exhaust Fan	4	3,000	12,000
1.5 ton Air Conditioner	5	90,000	450,000
Security Cameras - 2MP	8	2,000	16,000
Digital Video Recorder (DVR)	1	12,000	12,000

Total			985,000
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9.1.5. Furniture and Fixtures

Table 8 provides details of furniture and fixtures.

Table 8: 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
Staff Table	5	25,000	125,000
Staff Chairs	16	10,000	160,000
Sofa Sets	2	35,000	70,000
Wall Racks	5	15,000	75,000
Wooden Pallet (36*36 inches) for storing raw material	6	5,000	30,000
Total			510,000

9.1.6. Vehicles

Table 9 provides details of the vehicles required along with their cost for the proposed project.

Table 9: Office Vehicle Cost Details

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Carry Van	1	1,075,000	1,075,000
Motorcycle	1	92,250	92,250
Total			1,167,250

9.1.7. Pre-Operating Costs

Table 10 provides details of estimated pre-operating costs.

Table 10: Pre-Operating Cost Details

Costs Item	No.	Hiring Months Before in Year 0	Unit Cost (PKR)	Cost (PKR)
Production Manager	1	1	80,000	80,000
Labor skilled	1	1	30,000	30,000
Quality In-charge	1	1	40,000	40,000
Office Boy	1	1	20,000	20,000

Security Guard	1	1	20,000	20,000
Utilities expense				65,517
Total Cost (PKR)				255,517

9.2. Breakeven Analysis

Table 11 shows calculation of break-even analysis.

Table 11: Breakeven Analysis

Particulars	Amount First Year (PKR)	Profitability Ratio
Sales (PKR) – A	29,653,940	100%
Variable Cost (PKR) – B	19,894,042	67%
Contribution (PKR) (A-B) = C	9,759,898	33%
Fixed Cost (PKR) – D	7,843,292	26%
Contribution Margin	33%	
Breakeven		
Breakeven Revenue (PKR)		23,830,629
Breakeven (kG)		86,406
Breakeven (Packets)		192,973
Breakeven Capacity		48%

9.3. Revenue Generation

Table 12 provides details for revenue generation of the production during the first year of operations.

Table 12: Revenue Details

Products	Quantity Sold during the Year (Packets) (A)	Price Per Packet (PKR) (B)	Total Revenue (PKR) (A*B)
Macaroni (400g packets)	52,640	90	4,737,600
Macaroni (1kg packets)	21,056	220	4,632,320
Spaghetti (450g packets)	35,094	110	3,860,340
Spaghetti (1kg packets)	10,528	240	2,526,720

Noodles (250g packets)	42,112	90	3,790,080
Noodles (500g packets)	21,056	180	3,790,080
Egg Noodles (250g packets)	42,112	100	4,211,200
Egg Noodles (500g packets)	10,528	200	2,105,600
Total	235,126		29,653,940

9.4. Variable Cost Estimate

Variable costs of the project have been provided in Table 13.

Table 13: Variable Cost Estimate

Description of Costs	Amount (PKR)
Raw Material- Macaroni	4,095,392
Raw Material- Spaghetti	2,565,352
Raw Material- Noodles	2,042,432
Raw Material- Egg Noodles	1,716,064
Packing Cost	896,988
Box Packing	2,856,606
Cartons packing cost	560,134
Direct Utilities Cost	739,953
Direct Labor	2,760,000
Machinery Maintenance - Cost	456,450
Fuel Cost-Generator	110,993
Other Consumables	52,170
Water expense	8,970
Communications expense (phone,mail, internet, etc.)	213,000
Office vehicles running expense	606,538
Office expenses (stationery, entertainment, etc.)	213,000
Total Variable Cost (PKR)	19,894,042

Table 14: Raw Material Cost per Packet

Cost Item	Unit of Measurement	Cost per Unit (PKR)	Consumption per Batch	Cost (PKR)
Water	Liter	-	17.00	-
Semolina (sooji)	Kg	110	70.00	7,700
Salt	Kg	40	2.00	80
Total Cost of Batch (80 kg/hour)			89	7,780
Batch Output (Kgs)*			80	
Cost per 1 Kg (PKR)				97
Cost per 250 grams (PKR)				24
Cost per 400 grams (PKR)				39
Cost per 450 grams (PKR)				44
Cost per 500 grams (PKR)				49

5-10% loss is expected

Table 15: Raw Material Per Packet-Egg Noodles

Cost Item	Unit of Measurement	Cost per kg/liter (PKR)	Consumption per Batch	Cost (PKR)
Water	Liter	-	14.00	-
Semolina (sooji)	Kg	110	70	7,700
Eggs*	No.	15	3.5	1,050.0
Salt	Kg	40	1.00	40.0
Total Cost of Batch			88.50	8,790.0
Batch Output (Kgs)			80.00**	
Cost per 1 Kg (PKR)				109.88
Cost per 250 grams (PKR)				27.00
Cost per 500 grams (PKR)				55.00

*For the production of one batch (80 kg) of egg noodles, 70 eggs are used. Average weight of 1 egg is 60 grams, out of which 10 grams of weight is lost because of egg shell, the remaining 50 grams is used in the production process of egg noodles. For the purpose of calculating the total quantity per batch the consumption of total required eggs is shown in kilograms.

**5-10% loss is expected

Table 16: Direct Labor Cost

Personnel	Number of Personnel	Salary per Month (PKR)	Annual Salaries (PKR)
Production Manager	1	80,000	960,000
Labour Skilled	3	30,000	1,080,000
Labour – Unskilled	3	20,000	720,000
Total	7		2,760,000

Table 17: Machinery Maintenance Cost

Cost Item	Machinery Cost (PKR)	Rate	Total Cost (PKR)
Machinery Maintenance Cost	3,043,000	15%	456,450
Total (PKR)			456,450

Table 18: Packing Cost

Cost Item	Cost per kg (PKR)	Consumption per packet (gram)	Cost per packet (A)	Quantity Sold (packets) (B)	Total Cost (PKR) (C=A*B)
Packing Cost-400 gram	800	4.5	3.6	52,640	189,504
Packing Cost-450 gram		4.8	3.8	35,094	134,761
Packing Cost-250 gram		4	3.2	84,224	269,517
Packing Cost-500 gram		5	4.0	31,584	126,336
Packing Cost-1 kg		7	5.6	31,584	176,870
Total					896,988

Table 19: Box Packing Cost

Cost Item	Cost per Box (A)
Box Packing-250grams	10
Box Packing-400grams	12.5
Box Packing-450grams	13
Box Packing-500grams	13.5
Box Packing-1 kilograms	15

Table 20: Carton Packing Cost

Cost Item	Packets Capacity per carton (packets)	No. of cartons	Unit Cost (PKR)
Cartons for Packaging-250grams	34	2,477	50
Cartons for Packaging-400grams	22	2,393	50
Cartons for Packaging-450grams	22	1,595	50
Cartons for Packaging-500grams	20	1,579	50
Cartons for Packaging-1kg	10	3,158	50

Table 21: Vehicle Maintenance Cost

Particulars	Van (km Per Year)	Motorcycle KM Per Year	Motorcycle	Carry Van	Total (PKR)
Fuel cost	42,000	28,000	102,641	410,564	513,205
Mileage (km)			40	15	
Oil & Tuning Cost (PKR)			23,333	70,000	93,333
Oil & Tuning KM			1,200	3,000	
No of Vehicles			1	1	2

Yearly Cost			125,974	480,564	606,538
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Table 22: Variable Cost Assumption

Description of Costs	Rate	Rationale
Fuel Cost-Generator	15%	of utilities cost
Communications expense (phone,mail, internet, etc.)	5%	of Management staff expense
Office expenses (stationery, entertainment, janitorial services, etc.)	5%	of Management staff expense

9.5. Fixed Cost Estimate

Table 23 shows the estimated fixed cost of the project.

Table 23: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Management Staff	4,260,000
Administration benefits expense	351,000
Building rental expense	1,560,000
Promotional expense	593,079
Depreciation expense	896,692
Indirect Utilities	37,283
Amortization of pre-operating costs	51,103
Bad debt expense	74,135
License,Permits,etc.	20,000
Total Fixed Cost (PKR)	7,843,292

Table 24: Management Staff

Personnel	Number of Personnel	Salary per Month (PKR)	Annual Salaries (PKR)
Accountant	1	50,000	600,000
Sales Manager	1	50,000	600,000
Sales Staff	1	30,000	360,000
Procurement Staff	1	40,000	480,000
Mechanical Technician	1	30,000	360,000

Quality In-charge	1	40,000	480,000
Quality In-charge Assistant	1	30,000	360,000
Office Boy	1	20,000	240,000
Security Guard	2	20,000	480,000
Driver	1	25,000	300,000
Total	11		4,260,000

Table 25: Other Consumables

Cost Item	No.	Unit Cost (PKR)	Total Cost(PKR)
Soap	60	40	2,400
Detergent	12	180	2,160
Sponge	24	60	1,440
Mop	10	200	2,000
Stainless Steel Sprial	24	50	1,200
Liquid Soap	12	180	2,160
Phenyle	24	190	4,560
Disposable Hairnet Caps	500	60	30,000
Disposable Gloves (Pack of 100)	25	250	6,250
Total			52,170

Table 26: License, Permits, etc.

Cost Item	No.	Total Cost (PKR)
Sindh Food Authority	1	20,000
Total Cost (PKR)		20,000

License, Permits, etc. are expensed out annually as it is fixed as per the rules. The license fees for food authority may differ in different provinces. Punjab food authority License fee is PKR 13,000.

Table 27: Fixed Cost Assumption

Description of Costs	Rate	Rationale
Administration benefit expense	5%	of Salaries
Promotion expense	2%	of revenue

Bad Debt expense	0.25%	of revenue
Depreciation		
Building Renovation	10%	of renovation cost
Machinery and Equipment	15%	of cost
Office Equipment/Office Vehicle/Furniture and Fixture	15%	of cost

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 28.

Table 28: Financial Feasibility Analysis

Description	Project
IRR	58%
NPV (PKR)	39,888,335
Payback Period (years)	2.64
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 29.

Table 29: Financial Feasibility Analysis with 50% Debt

Description	Project
IRR	57%
NPV (PKR)	45,471,041
Payback Period (years)	2.67
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 30.

Table 30: Human Resource

Personnel	No.	Monthly Salary (PKR)	Annual Salary (PKR)
Production Manager	1	80,000	960,000
Labour – Skilled	3	30,000	1,080,000
Labour – Unskilled	3	20,000	720,000
Accountant	1	50,000	600,000
Sales Manager	1	50,000	600,000
Sales Staff	1	30,000	360,000
Procurement Staff	1	40,000	480,000
Mechanical Technician	1	30,000	360,000
Quality In-charge	1	40,000	480,000
Quality In-charge Assistant	1	30,000	360,000
Office Boy	1	20,000	240,000
Security Guard	2	20,000	480,000
Driver	1	25,000	300,000
Total	18		7,020,000

10. CONTACT DETAILS

The contact details of all the major suppliers of machinery and equipment and raw materials are given in Table 31.

Table 31: Contact Details

Name of Supplier	Address	Contact
Rehmat Flour Mills	Karim Park Lahore	0321-8473033
Iqra flour mills	Awami colony , Sector 19 , plote 5A landhe town, Sector 19 Korangi Industrial Area, Karachi	021-35064797
Ayub Flour Mills	Madina Town Peshawar	
Akbar Flour Mills	Muzaffarabad - Rajpian Rd, Kotla valley, Muzaffarabad, Azad Jammu and Kashmir	
Hunza Flour Mill	Hunza, Hassan Abad, Gilgit-Baltistan	
Henan Grande Machinery Co., Limited	Henan, China	0086-17737137548

Dongguan Sammi Packing machine Co., Limited	Guangdong, China	0086-18929213917
Foshan Suntech Machinery Co. Limited	China	

11. USEFUL LINKS

Table 32: Useful Links

Name of Organization	Website links
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
State Bank of Pakistan	www.sbp.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
Punjab Small Industries Corporation	www.psic.gop.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Industries and Commerce- Government of Balochistan	https://balochistan.gov.pk/departments-download/industries-and-commerce/
Small Industries Development Board- Government of Khyber Pakhtunkhwa	www.small_industries_de.kp.gov.pk
Pakistan Food Association	www.facebook.com/pfa.com.pk
Pakistan Flour Mill Association	www.thepfma.com
Pakistan Standards and Quality Control Authority (PSQCA)	http://www.psqca.com.pk
Punjab Food Authority	https://www.pfa.gop.pk/
Sindh Food Authority	https://sfa.gos.pk/
Khyber Pakhtunkhwa Food Safety & Halal Food Authority	https://kpfsa.gov.pk/
Food Department-Government of Balochistan	https://balochistan.gov.pk/departments/food-department/

International Pasta Organization

www.internationalpasta.org

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										
Revenue-Macaroni (PKR)	9,369,920	11,509,434	13,784,560	16,424,514	19,483,852	23,021,925	27,107,536	30,178,944	33,558,985	37,317,592
Revenue-Spaghetti (PKR)	6,387,060	7,845,508	9,395,925	11,195,853	13,281,302	15,692,634	18,477,749	20,571,415	22,875,413	25,437,459
Revenue-Noodles (PKR)	7,580,160	9,311,043	11,151,488	13,287,271	15,762,273	18,624,388	21,929,724	24,414,426	27,148,842	30,189,512
Revenue- Egg Noodles (PKR)	6,316,800	7,759,314	9,292,752	11,072,760	13,135,380	15,520,111	18,274,818	20,345,355	22,624,035	25,157,927
Total Revenue	29,653,940	36,425,298	43,624,724	51,980,397	61,662,806	72,859,057	85,789,827	95,510,140	106,207,275	118,102,490
Cost of sales										
Raw Material- Macaroni	4,095,392	4,979,258	5,902,752	6,961,537	8,174,073	9,559,967	11,141,811	12,277,807	13,513,773	14,874,160
Raw Material- Spaghetti	2,565,352	3,119,020	3,697,325	4,360,700	5,120,245	5,988,209	6,979,129	7,690,726	8,464,926	9,317,062
Raw Material- Noodles	2,042,432	2,483,239	2,943,772	3,471,827	4,076,544	4,767,672	5,556,592	6,123,122	6,739,517	7,417,961
Raw Material- Egg Noodles	1,716,064	2,086,463	2,473,334	2,917,059	3,425,178	4,005,772	4,668,695	5,144,685	5,662,584	6,232,617
Packing Cost	896,988	1,090,579	1,292,823	1,524,747	1,790,320	2,093,838	2,440,319	2,689,124	2,959,829	3,257,785
Box Packing	2,856,606	3,208,157	3,517,719	3,842,983	4,186,125	4,549,185	4,934,931	5,070,616	5,213,594	5,370,965
Cartons packing cost	560,134	711,828	843,832	995,210	1,168,554	1,366,659	1,592,809	1,755,206	1,931,897	2,126,375
Other Consumables	52,170	57,422	63,202	69,565	76,567	84,275	92,759	102,097	112,374	123,687
Direct Utilities Cost	739,953	806,820	879,729	959,228	1,045,910	1,140,425	1,243,482	1,355,851	1,478,375	1,611,970
Direct Labor	2,760,000	3,027,720	3,321,409	3,643,585	3,997,013	4,384,724	4,810,042	5,276,616	5,788,448	6,349,927
Machinery Maintenance - Cost	456,450	502,399	552,974	608,640	669,910	737,348	811,574	893,272	983,195	1,082,170
Fuel Cost-Generator	110,993	133,206	159,864	191,858	230,255	276,336	331,639	398,010	477,664	573,259
Water expense	8,970	11,891	15,370	19,766	25,306	32,271	41,009	49,274	59,135	70,970
Total cost of sales	18,861,504	22,218,003	25,664,106	29,566,705	33,986,001	38,986,680	44,644,790	48,826,407	53,385,310	58,408,908
Gross Profit	10,792,436	14,207,295	17,960,618	22,413,693	27,676,805	33,872,377	41,145,036	46,683,733	52,821,965	59,693,582
	36%	39%	41%	43%	45%	46%	48%	49%	50%	51%
General administration & selling expenses										
Management Staff	4,260,000	4,673,220	5,126,522	5,623,795	6,169,303	6,767,726	7,424,195	8,144,342	8,934,343	9,800,974
Administration benefits expense	351,000	385,047	422,397	463,369	508,316	557,622	611,712	671,048	736,140	807,545
Building rental expense	1,560,000	1,716,000	1,887,600	2,076,360	2,283,996	2,512,396	2,763,635	3,039,999	3,343,999	3,678,398
Indirect Utilities	37,283	40,652	44,326	48,331	52,699	57,461	62,654	68,315	74,489	81,220
License,Permits,etc.	20,000	22,013	24,229	26,668	29,353	32,308	35,560	39,140	43,080	47,417
Communications expense (phone,mail, internet, etc.)	213,000	233,661	256,326	281,190	308,465	338,386	371,210	407,217	446,717	490,049
Office vehicles running expense	606,538	667,596	734,801	808,771	890,187	979,799	1,078,432	1,186,995	1,306,485	1,438,005
Office expenses (stationery, entertainment, etc.)	213,000	233,661	256,326	281,190	308,465	338,386	371,210	407,217	446,717	490,049
Promotional expense	593,079	728,506	872,494	1,039,608	1,233,256	1,457,181	1,715,797	1,910,203	2,124,146	2,362,050
Depreciation expense	896,692	896,692	896,692	896,692	896,692	896,692	611,430	1,598,010	1,598,010	1,598,010
Amortization of pre-operating costs	51,103	51,103	51,103	51,103	51,103	-	-	-	-	-
Bad debt expense	74,135	91,063	109,062	129,951	154,157	182,148	214,475	238,775	265,518	295,256
Subtotal	8,875,830	9,739,215	10,681,879	11,727,028	12,885,993	14,120,105	15,260,308	17,711,261	19,319,644	21,088,973
Operating Income	1,916,606	4,468,080	7,278,740	10,686,664	14,790,812	19,752,272	25,884,728	28,972,472	33,502,321	38,604,609
Other income 2										
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	760,750	-	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	246,250	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	291,813	-	-	-
Earnings Before Interest & Taxes	1,916,606	4,468,080	7,278,740	10,686,664	14,790,812	19,752,272	27,183,541	28,972,472	33,502,321	38,604,609
Subtotal	-	-	-	-	-	-	-	-	-	-
Earnings Before Tax	1,916,606	4,468,080	7,278,740	10,686,664	14,790,812	19,752,272	27,183,541	28,972,472	33,502,321	38,604,609
Tax	370,674	760,424	1,667,559	2,860,332	4,296,784	6,033,295	8,634,239	9,260,365	10,845,813	12,631,613
NET PROFIT/(LOSS) AFTER TAX	1,545,932	3,707,656	5,611,181	7,826,332	10,494,028	13,718,977	18,549,301	19,712,107	22,656,509	25,972,996

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	1,570,549	2,932,144	4,604,426	6,480,218	8,576,143	10,880,016	18,167,553	38,124,912	60,830,860	95,620,042
Accounts receivable	-	4,765,812	5,854,066	7,011,116	8,353,992	9,910,094	11,709,491	13,787,651	15,349,844	17,069,026	13,827,314
Equipment spare part inventory	57,056	68,808	82,980	100,070	120,681	145,537	175,513	211,662	255,257	307,830	-
Raw material inventory	434,135	580,968	758,034	984,016	1,271,723	1,637,044	2,099,998	2,547,063	3,085,683	3,738,203	-
Finished goods inventory	-	392,896	462,486	534,353	615,940	707,593	811,751	930,100	1,017,217	1,112,194	1,216,852
Total Current Assets	1,491,191	7,379,031	10,089,710	13,233,983	16,842,556	20,976,412	25,676,769	35,644,028	57,832,912	83,058,114	110,664,209
<i>Fixed assets</i>											
Building/Infrastructure	409,045	368,141	327,236	286,332	245,427	204,523	163,618	122,714	81,809	40,905	-
Machinery & equipment	3,043,000	2,586,550	2,130,100	1,673,650	1,217,200	760,750	304,300	5,768,343	4,903,092	4,037,840	3,172,589
Furniture & fixtures	510,000	433,500	357,000	280,500	204,000	127,500	51,000	966,761	821,747	676,733	531,719
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	985,000	837,250	689,500	541,750	394,000	246,250	98,500	1,867,177	1,587,100	1,307,024	1,026,947
Total Fixed Assets	6,504,295	5,607,603	4,710,911	3,814,219	2,917,527	2,020,835	1,124,143	10,893,420	9,295,409	7,697,399	6,099,388
<i>Intangible assets</i>											
Pre-operation costs	255,517	204,414	153,310	102,207	51,103	-	-	-	-	-	-
Total Intangible Assets	255,517	204,414	153,310	102,207	51,103	-	-	-	-	-	-
TOTAL ASSETS	8,251,003	13,191,048	14,953,931	17,150,409	19,811,186	22,997,247	26,800,912	46,537,448	67,128,322	90,755,512	116,763,597
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	3,394,113	4,076,134	4,780,418	5,587,523	6,512,900	7,573,749	8,760,982	9,639,750	10,610,432	10,645,520
Total Current Liabilities	-	3,394,113	4,076,134	4,780,418	5,587,523	6,512,900	7,573,749	8,760,982	9,639,750	10,610,432	10,645,520
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	8,251,003	8,251,003	8,251,003	8,251,003	8,251,003	8,251,003	8,251,003	8,251,003	8,251,003	8,251,003	8,251,003
Retained earnings	-	1,545,932	2,626,794	4,118,987	5,972,660	8,233,344	10,976,160	29,525,462	49,237,568	71,894,077	97,867,073
Total Equity	8,251,003	9,796,935	10,877,797	12,369,991	14,223,663	16,484,347	19,227,164	37,776,465	57,488,572	80,145,081	106,118,077
TOTAL CAPITAL AND LIABILITIES	8,251,003	13,191,048	14,953,931	17,150,409	19,811,186	22,997,247	26,800,912	46,537,448	67,128,322	90,755,512	116,763,597

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		1,545,932	3,707,656	5,611,181	7,826,332	10,494,028	13,718,977	18,549,301	19,712,107	22,656,509	25,972,996
Add: depreciation expense		896,692	896,692	896,692	896,692	896,692	896,692	611,430	1,598,010	1,598,010	1,598,010
amortization of pre-operating costs		51,103	51,103	51,103	51,103	51,103	-	-	-	-	-
Accounts receivable		(4,765,812)	(1,088,254)	(1,157,051)	(1,342,876)	(1,556,101)	(1,799,397)	(2,078,159)	(1,562,193)	(1,719,183)	3,241,712
Equipment inventory	(57,056)	(11,752)	(14,172)	(17,091)	(20,611)	(24,856)	(29,975)	(36,149)	(43,595)	(52,574)	307,830
Raw Material Inventory	(434,135)	(146,833)	(177,067)	(225,982)	(287,707)	(365,320)	(462,954)	(447,064)	(538,620)	(652,520)	3,738,203
Finished Goods Inventory		(392,896)	(69,590)	(71,867)	(81,587)	(91,653)	(104,158)	(118,348)	(87,117)	(94,977)	(104,658)
Accounts payable		3,394,113	682,021	704,284	807,105	925,376	1,060,849	1,187,234	878,767	970,682	35,089
Cash provided by operations	(491,191)	570,549	3,988,390	5,791,269	7,848,451	10,329,269	13,280,033	17,668,243	19,957,360	22,705,948	34,789,182
<i>Financing activities</i>											
Issuance of shares	8,251,003	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	8,251,003	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(6,759,812)	-	-	-	-	-	-	(10,380,706)	-	-	-
Cash (used for) / provided by investing activities	(6,759,812)	-	-	-	-	-	-	(10,380,706)	-	-	-
NET CASH	1,000,000	570,549	3,988,390	5,791,269	7,848,451	10,329,269	13,280,033	7,287,537	19,957,360	22,705,948	34,789,182

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 33: Operating Cost Assumptions

Description	Details
Operating costs growth rate	10.1%
Administration benefits expense	5.0% of Staff Salaries
Communication expenses	5% of management staff expense
Office vehicle running expenses	606,538 annual vehicle running cost
Office expenses (stationery, janitor, etc.)	5% of management staff expense
Promotional Expense	2% of revenue

13.2. Revenue Assumptions

Table 34: Revenue Assumptions

Description	Details
Sale price growth rate	11.2%
Capacity utilization	60%
Capacity utilization growth rate	5%
Maximum capacity	90%

13.3. Financial Assumptions

Table 35: Financial Assumptions

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	0:100
Discount Rate (100%Equity)	15%
Discount Rate (Debt: Equity 50:50)	13%

13.4. Cash Flow Assumptions

Table 36: Cash Flow Assumptions

Description of Cost	Details
Accounts Receivable Cycle (in Days)	45
Accounts Receivable Cycle (in Days)	60

13.5. Debt Related Assumptions**Table 37: Debt Related Assumptions**

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	50:50
Discount Rate	13%
Debt Tenure	5 years
Grace Period	1 Year
Interest Rate (KIBOR+3%)	11.3%

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