Pre-feasibility Study

MANUFACTURING OF ALUMINIUM FOOD PACKAGING CONTAINERS

August 2022

"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, andrevenues 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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For information	helpdesk.punjab@smeda.org.pk

2. EXECUTIVE SUMMARY

This "Pre-feasibility Document" provides details for setting up a unit for "Manufacturing of Aluminium Food Packaging Containers" (hereinafter referred to as the proposed unit). Aluminium foil is an important material and has wide applications in food packaging, construction industry, pharmaceutical packaging, air conditioning, heat exchangers. It protects fiber cables from moisture and reduces interference from electronic devices in communication cables and has many other uses in different industries.

Aluminium is used to make the food-grade Aluminium foil products to keep the food fresh, flavorful, moisture proof and non-toxic. Aluminium foil is a good conductor of both electricity and heat, but it can also act as an insulator. With reference to the present toxicological knowledge, the use of food-grade Aluminium in packaging material is considered safe. The metal can be allowed to come in direct contact with the food, without any concerns of harming the human health. Therefore, Aluminium foil is widely used in food packaging.

In the proposed project, Aluminium foil is used to make eight different types of food packaging containers. These include Aluminium Foil Containers of 210 ml, 250 ml, 450 ml and 650 ml capacity, BBQ Grill Tray, Loaf Bread Pan, Round Pizza Pan and Round Universal Bake Pizza Plate. These Aluminium foil products are the most commonly used products for packaging of different food and edible products in the food industry.

The proposed unit can be established in industrial areas of large to medium cities like Karachi, Lahore, Faisalabad, Islamabad, Peshawar, Quetta, Hyderabad, Multan, Rawalpindi, Bahawalpur, Sargodha, Sialkot, Gilgit, Mardan, Lasbela, Sukkur, Gujranwala, Muzaffarabad and other cities. These cities are suitable due to their large populations, presence of existing industrial clusters and availability of industrial infrastructure and skilled labor.

The proposed manufacturing unit has a total annual capacity to manufacture 4,704,400 eight different types of Aluminium foil containers. These include 470,400 containers of 210 ml capacity, 470,400 containers of 250 ml capacity, 705,600 containers of 450 ml capacity, 940,800 containers of 650 ml capacity, 940,800 BBQ Grill Trays, 235,200 Loaf Bread Pans, 470,400 Round Pizza Pans and 470,400 Round Universal Bake Pizza Plates.

The initial year production capacity of the proposed manufacturing unit is assumed to be 60% at which the proposed unit will manufacture total of 2,822,400 units/year of all eight products. These include 282,240 containers of 210 ml capacity, 282,240 containers of 250 ml capacity, 423,360 containers of 450 ml capacity, 564,480 containers of 650 ml capacity, 564,480 BBQ Grill Trays, 141,120 Loaf Bread Pans, 282,240 Round Pizza Pans and 282,240 Round Universal Bake Pizza Plates.

This manufacturing unit will be set up in a rented building with an area of 1,800 square feet (8 Marla). The proposed business requires a total investment of PKR

12.93 million. This includes capital investment of PKR 8.82 million and working capital of PKR 4.12 million. The project will be established using 100% equity financing. The Net Present Value (NPV) of project is PKR 38.25 million with an Internal Rate of Return (IRR) of 69% and a Payback period of 2.04 years. Further, this project is expected to generate Gross Annual Revenues of PKR 42.04 million during 1st year, Gross Profit (GP) ratio ranging from 49% to 56% and Net Profit (NP) ratio ranging from 12% to 34% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 37% (1,759,884 Containers) with annual breakeven revenue of PKR 26.21 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 46.19 million, Internal Rate of Return (IRR) of 68% and Payback period of 2.08 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 12% to 34% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 39% (1,819,380 Containers) with breakeven revenue of PKR 27.10 million.

The proposed project will provide employment opportunities to 23 people, working in a single shift of 8 hours during 280 days in a year. High return on investment and steady growth of business is expected to 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 Proprietor” or “Partnership” concern.

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 facilitate potential investors in setting up a "Manufacturing of Aluminium Food Packaging Containers" by providing a general understanding of the business with the intention of supporting them in 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

This document provides details for setting up a manufacturing unit of Aluminium food packaging containers. Aluminium foil is made from Aluminium alloy and is durable and non-toxic. Aluminium foil is a good conductor of both electricity and heat, but it can also act as an insulator. It is used to a great extent as a food wrapper due to its reflectivity property. Whenever it is wrapped around food items it usually reflects off the heat back to the food items. At temperature range from -80 to +150 degrees the material properties of Aluminium foil remain constant. Even in the form of extremely thin rolled foil, Aluminium can score with its numerous advantages. Aluminium foil is extremely heat resistant.

The high resistance properties and the relatively low cost makes Aluminium foil suitable for industrial applications such as thermal insulation for the construction

industry, heat exchanger[1] for air conditioners, electrical coils for transformers, capacitors for radios and televisions, insulation for storage tanks, decorative products, pharmaceutical and food packaging.

In the proposed project, Aluminium foil will be used for manufacturing food-grade containers. Its resistance against the absorption of moisture, oxidation and volatile deterioration of the food as well as against the impact of light and temperature is generally higher than that of any other laminate material. Also, it is environmentally friendly and can be recycled and reused according to global concept of rational use of resources.

Food-grade Aluminium is widely used in wrapping, baking and storage of food. The commonly used alloys are 1145, 1235, 1100, 3003, 8011, 8079 and others. In the proposed project, 8011 (9 microns) Aluminium foil is used for manufacturing of food container of different varieties. 8011 Aluminium foil contains 97.5% to 99.1% Aluminium and has silver surface finish. It is currently the most widely used metal alloy in our daily life. Its diverse properties such as non-toxicity, tastelessness, safe and sanitary exposure to food, excellent vapor resistance and high barrier capacity against light, gases, and moisture are the key reasons to make it suitable to be used in packaging solutions for food, drink, medicines, and many other technical applications.

In the proposed project, Aluminium foil 8011 (9 microns) is used to make eight products. These include Aluminium foil container of four different capacities of 210 ml, 250 ml, 450 ml and 650 ml and other four products including BBQ Grill Tray, Loaf Bread Pan, Round Pizza Pan and Round Universal Bake Pizza Plate. These Aluminium foil products are the most commonly used packaging in the food industry for different food products. Aluminium metal foil helps to keep the food fresh, flavorful, moisture proof and non- toxic.

Aluminium Foil Container

Aluminium foil food containers of different capacities and dimensions are used for packaging of different products. Aluminium food containers of 210 ml capacity with dimensions 125 mm*90 mm*40 mm (L*W*D)[2], 250 ml capacity with dimensions 130 mm*102 mm*43 mm, 450 ml capacity with dimensions 161 mm*111 mm*40 mm and 650 ml capacity with dimensions 190 mm*138 mm* 49 mm are mostly used for small take-outs, side dishes, salads, sauce packaging, etc. Figure 1 shows Aluminium foil containers of different sizes.

[1] https://study.com/academy/lesson/why-does-Aluminium-foil-conduct-electricity.html
[2] Length*Width*Depth

Figure 1: Aluminium Foil Containers

BBQ Grill Tray

Bar B Q Grill Tray is disposable Aluminium grill tray which can be used in place of electric grill. Being made of Aluminium, it offers protection against harmful polycyclic aromatic hydrocarbons released from coal or electric grill. It has a dimension of 340 mm*230 mm*28 mm (L*W*D). Figure 2 shows BBQ Grill Tray.

Figure 2: BBQ Grill Tray

Loaf Bread Pan

A bread pan, also called a loaf pan, made of Aluminium foil, is a kitchen utensil, made in the form of a container, in which bread is baked. Its function is to shape bread while rises during baking. The most common shape of the bread pan is the loaf or narrow rectangle with the dimension of 215 mm*114 mm*63 mm (L*W*D), a convenient form that enables uniform slicing of bread. Figure 3 shows loaf bread pan.

Figure 3: Loaf Bread Pan

Round Pizza Pan: Compared to the steel pizza pan, the Aluminium pizza pan is lighter and thinner. This pan is a much better heat conductor than steel, disposable and cheap. It has a dimension of 300 mm diameter. Figure 4 shows round pizza pan.

Figure 4: Round Pizza Pan

Round Universal Bake Pizza Plate: Round universal baking pizza plate is made of food grade Aluminium. This is very suitable for pizza baking, pizza packing and takeout, roasting, food cooking, food packing, food takeout. It is widely used in kitchens, restaurants, hotels, bakeries, etc. It is disposable, eco-friendly and 100% recyclable. It can be directly used on fire, in oven, in microwave and refrigerators due

to its high resistant [3]properties. It has a diameter of 145 mm. Figure 5 shows round universal bake pizza plate.

Figure 5: Round Universal Bake Pizza Plate

5.1. Product Features

- **Insulating Heat & Keeping Flavor**

Aluminium foil keeps the food warm and maintains the taste of food. Aluminium foil reflects light and can be used for insulation, especially in areas that need to be guarded against heat. When it is used with other materials, it can be used to warm an object. Paper and cotton releases heat at a quicker rate than Aluminium foil. Aluminium foil can keep things insulated, as it traps air when it is wrapped around an object.[12]

- **Harmless To Human Body**

The popular plastic lunch containers on the market are harmful to human health. When disposable foamed plastic tableware is filled with hot food or boiled water above 65 degrees Celsius, the toxic substances contained in the tableware can easily penetrate the food. If the concentration of this harmful substance exceeds the limits, it can lead to poisoning. Aluminium foil packaging is safe in the sense that it does not create harmful effect on contact with food unless it is acidic.

- **Environment-Friendly**

The Aluminium foil made food containers are recyclable. The recycling life of Aluminium is high and it can be recycled up to 25 times. Aluminium meets the national food hygiene standards and does not produce harmful substances during the processing.

[3] https://study.com/academy/lesson/why-does-Aluminium-foil-conduct-electricity.html

Compared with the geological pollution caused by plastic products, Aluminium foil containers can be weathered after being placed in the soil for two to three years, and will not cause continuous damage to the land and implanted nature changes.

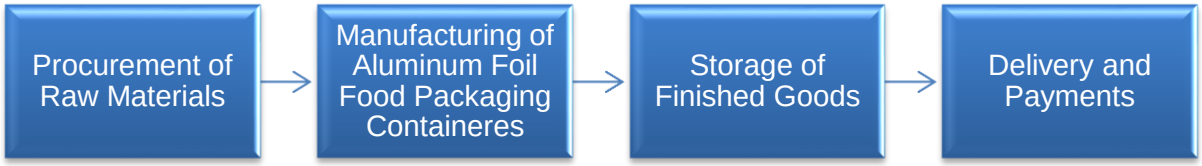
- **Strong Malleability and Ductility**

Aluminium has a physical property, that it is highly malleable and ductile. Malleable property of Aluminium allows it to be hammered into thin sheets to transform into Aluminium foil. The ductility property of Aluminium allows it to be drawn or stretched into thin wires.

5.2. Process Flow for Manufacturing of Aluminium Food Packaging Containers

The process flow for manufacturing of Aluminium food packaging containers is shown in Figure 6.

Figure 6 : Process Flow for Manufacturing of Aluminium Food Packaging Containers



Brief description of process flow is given below:

Procurement of Raw Material

In the proposed unit of manufacturing of Aluminium food packaging Containers Aluminium alloy 8011 foil (9 microns) is used as raw material for production of Aluminium food packaging products. This material offers the required metallic qualities of high tensile strength, processing ability, formability and corrosion resistance. This makes it a perfect material for making food containers. In Pakistan, Aluminium foil is imported from different countries including USA, UK, China and Germany. It is available in roll form in different weights of 1 to 3 tons per roll. In the proposed project, rolls having weight of 3 ton have been assumed. It can be further processed (to increase or decrease the thickness of the foil) by the buyers as per required customization to use it into manufacturing of different types of products including the manufacturing of food packaging Containers.

Manufacturing of Aluminium Food Packaging Containers

After procurement of Aluminium alloy 8011 foil (9 micron) rolls, the next process is manufacturing of Aluminium food packaging Containers. Aluminium foil container making machine (fully automatic) is used to manufacture Aluminium food packaging. It is a China origin imported machine with automatic Aluminium foil feeder/decoiler,

automatic 45 ton press, lubricator customized molds, automatic product and scrap sacker/collector. It has capacity of manufacturing 40 pieces per minute and having a single cavity to hold a mold of single product and requires a power of 8 KW. In the proposed project the machine is assumed to be operating for 7 hour a day, with one hour of a day kept for replacement of mold of one product with that of other. Figure 7 shows Aluminium foil container making machine.

Figure 7: Aluminium Foil Container Making Machine

Different parts of the machine and their functions are narrated below:

- **Electronic Panel**

Complete manufacturing of Aluminium foil container is controlled by an electronic panel, making the whole process completely automatic. The electronic panel controls the speed of the machine and other systems. Figure 8 shows electronic panel.

Figure 8: Electronic Panel

Aluminium Foil Feeder/Decoiler

At first stage of manufacturing process, Aluminium foil is fed into automatic press through automatic coil feeder. In this process, a roll of Aluminium foil is placed in the decoiler, which unwraps the foil and feeds it into the machine in straight sheets form. The decoiler can have a large roll placed in it which saves time as the roll does not have to be changed often. Figure 9 shows Aluminium foil feeder/decoiler.

Figure 9: Aluminium Foil Feeder/Decoiler

- **Oil Feeder**

There is automatic lubrication system inside the machine to prevent friction which can harm the foil causing manufacturing of defective Aluminium foil containers. The lubrication comes from the oil feeder.

- **Pneumatically Powered Press**

The press compresses Aluminium sheet in a mold to give it the shape of a container. The press also has an instant breaking mechanism to separate the newly formed container from the leftover foil. The press may have single cavity or multiple cavities customized molds. The molds decide the shape and style of the container.

Figure 10: Pneumatically Powered Press

- **Product and Scrap Collection Station**

Collection of the completed Aluminium foil containers is the last part of the process. The fully automatic machine not only stacks the Aluminium foil containers but also counts them. In the production process, the leftover foil from the process is automatically collected by the collectors, which can then be recycled. During production of Aluminium foil containers, about 10% of scrap is produced. Figure 11 shows product collection station.

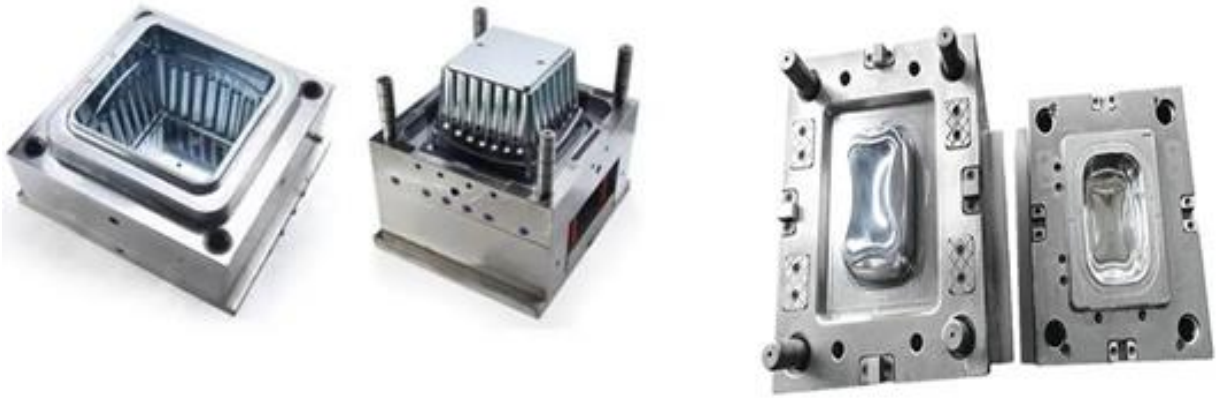
Figure 11: Product Collection Station

- **Customized Molds**

In the proposed project, eight different products are manufactured. These include Aluminium foil containers of 210 ml, 250 ml, 450 ml and 650 ml capacity, BBQ Grill Tray, Loaf Bread Pan, Round Pizza Pan and Round Universal Bake Pizza Plate. These products have different dimensions and shapes. So, these products are manufactured by using different customized molds (made of stainless-steel) for each different product in Aluminium foil container making machine. These customized molds are imported, along with Aluminium foil container making machine and

customized by the supplier as per the requirements of customer. Figure 12 shows customized molds.

Figure 12: Customized Molds



Finished Goods Store

After completion of manufacturing processes, the finished Aluminium food packaging containers are packed into polythene bags and transferred to finished goods store. Depending on the sizes, the bags contain 500-1000 pieces. The finished goods store maintains finished inventory of Aluminium food packaging Containers in safe and secure conditions until the goods are dispatched.

Delivery and Payment

Finished products (Aluminium food packaging Containers) are delivered to the target market through loader rickshaw or the customer can get the goods by physically visiting the factory. The payment is made in cash for all customers. As per market survey, purposed products are unique and not available in Pakistan, therefore, the business will not be operating at credit bases and all the market is running on cash bases that's why there are no receivable days proposed in the project.

5.3. Installed and Operational Capacities

The proposed manufacturing unit of Aluminium food packaging Containers will operate in a single shift of 8 hours in a day for 280 days in a year. Further, it is assumed that the operational capacity for the manufacturing unit of Aluminium food packaging Containers is 60% during the first year of its operations. The capacity will increase at the rate of 5% per annum attaining a capacity of maximum of 90% of its total production capacity during the projected period of 7 years. At 100% production capacity, the proposed unit will manufacture 4,704,400 eight different types of Aluminium foil containers. These include 470,400 containers of 210 ml capacity, 470,400 containers of 250 ml capacity, 705,600 containers of 450 ml capacity, 940,800 containers of 650 ml capacity, 940,800 BBQ Grill Trays, 235,200 Loaf Bread Pans, 470,400 Round Pizza Pans and 470,400 Round Universal Bake Pizza Plates.

At the initial year production capacity of 60% at which the proposed unit will manufacture total of 2,822,400 units/year of all eight products. These include 282,240 containers of 210 ml capacity, 282,240 containers of 250 ml capacity, 423,360 containers of 450 ml capacity, 564,480 containers of 650 ml capacity, 564,480 BBQ Grill Trays, 141,120 Loaf Bread Pans, 282,240 Round Pizza Pans and 282,240 Round Universal Bake Pizza Plates.

Table **1**, Table 2 and Table 3 respectively show hourly capacity, overall installed and operational capacity and product wise annual installed and operational capacity for manufacturing Aluminium food packaging containers.

Table 1: Hours Capacity for Manufacturing Aluminium Food Packaging Containers

Working Hours per Day	Operational Hours of Machine per Day	Molds Replacement Hours
8	7	1

Table 2: Overall Installed and Operational Capacity of Aluminium Food Packaging Containers

Machine	Machine Capacity per min (Containers)	Machine Capacity per hour (Containers)	Machine Capacity per day (Containers)	Annual Working Days	Annual Production (Containers) @ 100%	Intial Year Production (Containers) @ 60%
Aluminium foil container making machine	40	2,400	16,800	280	4,704,000	2,822,400
Total					**4,704,000**	**2,822,400**

Table 3: Product Wise Installed and Operational Capacity of Aluminium Food Packaging Containers

Products	Ratio	Annual Year Production (Containers)	Annual Capacity (Containers)	Initial Capacity @ 60% (Containers)
Aluminium foil container 210 ml	10%	4,704,000	470,400	282,240
Aluminium foil container 250 ml	10%		470,400	282,240
Aluminium foil container 450 ml	15%		705,600	423,360

Aluminium foil container 650 ml	20%		940,800	564,480
BBQ Grill Tray	20%		940,800	564,480
Loaf Bread Pan	5%		235,200	141,120
Round Pizza Pan	10%		470,400	282,240
Round Universal Bake Pizza Plate	10%		470,400	282,240
Total (PKR)	**100%**		**4,704,000**	**2,822,400**

6. CRITICAL FACTORS

Before making the decision to invest in manufacturing unit of Aluminium food packaging Containers, one should carefully analyze the associated risk factors. The important considerations in this regard include:

- The quality of the aluminium packaging containers is critical to the success of the business. Customers expect packaging that is durable, safe, and visually appealing.
- Cost is another critical success factor. The business must be able to produce packaging containers at a competitive price while maintaining profitability.
- Innovation is important to stay ahead of the competition. The business should continuously look for ways to improve the design, functionality, and efficiency of the packaging containers.
- Providing excellent customer service is essential to building a loyal customer base. The business should be responsive to customer needs and provide timely and effective support.
- Having an efficient distribution network is important to ensure that the packaging containers reach customers on time and in good condition.
- Understanding market demand is crucial to the success of the business. The business should conduct market research to identify emerging trends and customer needs.
- The business must comply with relevant regulations and standards to ensure the safety and quality of its products. This includes ensuring that the packaging containers meet relevant food safety standards and regulations.
- Availability of good quality raw material
- Availability of skilled staff minimizing production losses and maintaining high quality of finished products

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Major users of Aluminium food packaging Containers include food industry and general public. Therefore, the proposed manufacturing unit may be established in large to medium cities of Pakistan, including Karachi, Lahore, Faisalabad, Islamabad, Peshawar, Quetta Gujranwala, Sheikhupura, Hyderabad, Rawalpindi, Multan, Bahawalpur, Sargodha, Sialkot, Gilgit, Mardan, Muzaffarabad, Sahiwal, Sukkur, Lasbela, etc. These cities have large populations which constitute the potential customers of the proposed manufacturing unit. Moreover, these cities also offer the benefits of easy access to low-cost labor and presence of industrial infrastructure.

8. POTENTIAL TARGET MARKETS/CUSTOMERS

The potential target markets/customers for Aluminium food packaging containers are wholesalers, retailers, households, restaurants and food streets.

The food processing industry is considered to be one of the most promising sectors for not only domestic industrial development, but also for export growth. Pakistan is well positioned to develop its food processing industry boosted by an expanding urban middle class with rising disposable income. Sales of packaged food in Pakistan have surged in recent years. Food group exports from Pakistan during fiscal year 2022 increased by 23.37% and imports registered 8% growth as compared to the corresponding period of last year[4].

Food Industry in Pakistan is the 2nd largest in Pakistan after textile which accounts for 27% of its value added production and 16% of the total employment in manufacturing sector, with an estimated 180 million consumers[5]. Pakistan holds the world's eighth largest market when it comes to fast food and food related businesses. Large share of food industry in Pakistan's economy is given a clear indication that Aluminium food packaging containers business has great potential. In local consumption and export of food products Aluminium packaging is unavoidable to increase the shelf-life of food products.

Increasing preference for ready-to-eat food, changing lifestyles, busy work schedule as well as health-conscious mindset of individuals and online ordering of food are the key factors expected to drive growth of the target market over the forecast period. In addition, changing consumer's consumption pattern and westernization of products are other factor expected to support growth of this market in the near future and as per market survey, there are no manufacturing unit of aluminium food containers and all the proposed products are imported from international market therefore it will boost the profitability of business.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of manufacturing unit of Aluminium food packaging containers. 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 considering the relevant assumptions and target market.

[4] https://pakobserver.net/food-exports-surge-by-8-in-q1-fy22/
[5] https://invest.gov.pk/food-processing

9.1. Initial Project Cost

Table 4 provides fixed and working capital requirements for establishment of manufacturing unit for sealants.

Table 4: Initial Project Cost estimates

Particulars	Cost (PKR)	Reference
Land	-	9.1.1
Building / Infrastructure	179,080	9.1.2
Machinery & equipment	4,600,000	9.1.3
Furniture & fixtures	935,000	9.1.5
Office vehicles	494,000	9.1.6
Office equipment	1,768,900	9.1.4
Security against building	432,000	9.1.7
Pre-operating costs	406,578	9.2.9
Total Capital Cost - (A)	**8,815,558**	
Equipment spare part inventory	23,000	
Raw Material Inventory	2,951,760	
Upfront building rent	144,000	
Cash	1,000,000	
Total Working Capital	**4,118,760**	
Total Project Cost - (A+B)	**12,934,318**	

9.1.1. Land

The proposed unit will be established in a rented building having an area of 1,800 square feet (8 Marla). The breakup of the space requirement is provided in Table 5.

Table 5: Breakup of Space Requirement

Production Area	Break Up (%)	Number	Length	Width	Area (Sq. Ft.)
Executive Office	11%	1	20	10	200
Production Hall	28%	1	25	20	500
Raw Material Store	22%	1	20	20	400
Finished Goods Store	11%	1	20	10	200

Admin office	11%	1	20	10	200
Kitchen	3%	1	10	6	60
Washrooms	13%	6	5	8	240
Total Area	**100%**				**1,800**

9.1.2. Building/ Infrastructure

There will be no cost of building construction since the manufacturing unit of Aluminium of packaging Containers will be started in a rented building having an area of 1,800 square feet. However, there will be a renovation cost required to make the building usable for the business. Building rent of PKR 144,000 per month has been included in the operating cost. The proposed project requires electricity load of around 21-22 KW for which an industrial electricity connection will be required. Table 6 provide details of building renovation cost.

Table 6: Building Renovation Cost

Cost Item	Unit of Measurement	Total Liter / Area / Number	Cost/Unit / Sq.feet (PKR)	Total Cost (PKR)
Paint Cost	Liter	55	500	27,360
Labour Cost	Sq.Feet	5,472	10	54,720
Tile Cost	Sq.Feet	700	110	77,000
Labour Cost-Tile	Sq.Feet	700	10	7,000
Curtain	Units	2	4,000	8,000
Blinds	Units	1	5,000	5,000
Total (PKR)				**179,080**

9.1.3. Machinery and Equipment

Table 7 provides details of machinery and equipment for the proposed project.

Table 7: Machinery Cost Details

Cost Item	Number of Items	Unit Cost (PKR)	Total Cost (PKR)
Aluminium foil container making machine (40 Containers/min)	1	2,200,000	2,200,000
Cutomized Molds	8	300,000	2,400,000
Total (PKR)			**4,600,000**

9.1.4. Office Equipment

Table 8 shows details of equipment cost required for the manufacturing unit of Aluminium Food Packaging Containers.

Table 8: Office Equipment Cost Details

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
1.5 ton Inverter AC	6	105,000	630,000
Laptop	3	100,000	300,000
Desktop Computer	5	75,000	375,000
Laser Printer	3	51,500	154,500
Water Dispenser	2	24,000	48,000
Security System (6 Cams , 2 MP)	16	2,400	38,400
DVR	1	14,000	14,000
LED Tv 32"	1	36,000	36,000
WI-FI/ Internet Connection	2	3,500	7,000
Ceiling Fan	14	8,000	112,000
Exhaust Fan	12	4,500	54,000
Total Cost (PKR)			**1,768,900**

9.1.5. Furniture and Fixture

Table 9 provides details of furniture and fixtures.

Table 9: Furniture & Fixtures Cost Details

Cost Item	Number of Items	Unit Cost (PKR)	Total Cost (PKR)
Executive Table	1	60,000	60,000
Executive Chair	1	30,000	30,000
Staff Chairs	25	17,000	425,000
Staff Table	6	45,000	270,000
Visitor Chairs	6	10,000	60,000
Sofa Set	2	45,000	90,000
Total Cost (PKR)			**935,000**

9.1.6. Vehicles

Table 10 provides details of the vehicles required along with their cost for the proposed project.

Table 10: Office Vehicle Cost Details

Cost Item	Number of Vehicles	Unit Cost (PKR)	Total (PKR)
Loader Rickshaw	1	250,000	250,000
Motorcycle	3	80,000	240,000
Total Cost (PKR)	**4**		**490,000**

9.1.7. Pre-Operating Costs

Table 11 provides details of estimated pre-operating costs.

Table 11: Pre-Operating Cost Details

Costs Item	Hiring Months Beforein Year 0	Unit Cost (per month) (PKR)	Cost (PKR)
Production Supervisor	1	70,000	70,000
AluminiumFoil Container Making Machine Operator-Skilled	1	35,000	35,000
AluminiumFoil Container Making Machine Operator-Unskilled	1	25,000	25,000
Packing Operator-Unskilled	1	25,000	25,000
Loading/Unloading Operator-Unskilled	1	25,000	25,000
Driver	1	30,000	30,000
Office Boy	1	25,000	25,000
Security Guard	1	25,000	25,000
Utilities exp.			146,578
Total Cost (PKR)			**406,578**

9.1.8. Security against Building

Table 12: Security against Building

Particular	Months	Rent per month (PKR)	Total (PKR)
Security against building	3	144,000	432,000
Total (PKR)			**432,000**

9.2. Breakeven Analysis

Table 13 shows calculation of break-even.

Table 13: Breakeven Analysis

Particulars	Amount First Year (PKR)	Profitability Ratio
Sales (PKR) – A	42,042,000	100%
Variable Cost (PKR) – B	23,268,156	55%
Contribution (PKR) (A-B) = C	18,773,844	45%
Fixed Cost (PKR) – D	11,706,273	28%
Contribution Margin	45%	
Breakeven Analysis		
Breakeven Revenue (PKR)		26,214,937
Break-Even (Containers)		1,759,884
Breakeven Capacity		37%

9.3. Revenue Generation

Table 14 provides details regarding revenue generation from the manufacturing of Aluminium Food Packaging Containers during the first year of its operations.

Table 14: Revenue Details

Products	Initial Capacity @ 60% (Containers)	Finished Goods Inventory (30 days)	Qty. Sold – Year 1	Price per Container (PKR)	Revenue (PKR)
Aluminium foil container 210 ml	282,240	23,520	258,720	5.0	1,293,600
Aluminium foil container 250 ml	282,240	23,520	258,720	10.0	2,587,200

Aluminium foil container 450 ml	423,360	35,280	388,080	15.0	5,821,200
Aluminium foil container 650 ml	564,480	47,040	517,440	20.0	10,348,800
BBQ Grill Tray	564,480	47,040	517,440	30.0	15,523,200
Loaf Bread Pan	141,120	11,760	129,360	10.0	1,293,600
Round Pizza Pan	282,240	23,520	258,720	5.0	1,293,600
Round Universal Bake Pizza Plate	282,240	23,520	258,720	15.0	3,880,800
Total	**2,822,400**	**235,200**	**2,587,200**		**42,042,000**

9.4. Variable Cost Estimate

Variable costs of the project have been provided in Table 15.

Table 15: Variable Cost Estimate

Description of Costs	Amount (PKR)
Raw Material Cost	17,710,560
Packing Cost	28,224
Direct Utilities Cost	240,372
Direct Labor	3,060,000
Machinery Maintenance Cost	276,000
Communications expense (phone, mail, internet, etc.)	504,000
Office vehicles running expense	945,000
Office expenses (stationery, entertainment etc.)	504,000
Total Variable Cost (PKR)	**23,268,156**

Table 16: Raw Material Cost

Raw Material	Total Raw Material Required in tons	No. of Rolls Required	Unit Cost/ton (PKR)	Total Cost (PKR) @ 100% capacity	Total Cost (PKR) @ 60% capacity
Large AluminiumFoil Roll (8011 Alloy 9 microns) having weight of 3 tons	66	22	450,000	29,517,600	17,710,560
Total				**29,517,600**	**17,710,560**

Table 17: Raw Material Cost Calculations

Products	Weight of one Container (gram)	Annual Production in Containers	Raw Material Required in grams	Raw Material Required in kg	Raw Material Required for Finished Goods in tons (with 10% loss)	Raw Material Loss in tons (10%)	Total Raw Material Required in tons	Total Cost (PKR) @ 100% capacity	Cost per Container (PKR)
Aluminium foil container 210ml	4.0	470,400	1,881,600	1,882	1.882	0.209	2.091	940,800	2.00
Aluminium foil container 250ml	6.0	470,400	2,822,400	2,822	2.822	0.314	3.136	1,411,200	3.00
Aluminium foil container 450ml	8.0	705,600	5,644,800	5,645	5.645	0.627	6.272	2,822,400	4.00
Aluminium foil container 650ml	10.0	940,800	9,408,000	9,408	9.408	1.045	10.453	4,704,000	5.00

BBQ Grill Tray	27.0	940,800	25,401,600	25,402	25.402	2.822	28.224	12,700,800	13.50
Loaf Bread Pan	15.0	235,200	3,528,000	3,528	3.528	0.392	3.920	1,764,000	7.50
Round Pizza Pan	8.0	470,400	3,763,200	3,763	3.763	0.418	4.181	1,881,600	4.00
Round Universal Bake Pizza Plate	14.0	470,400	6,585,600	6,586	6.586	0.732	7.317	3,292,800	7.00
Total					**59.035**	**6.559**	**65.595**	**29,517,600**	

Table 18: Packing Cost

Products	Containers in one polythene bag	No. of bag required	Cost per bag (PKR)	Total Cost (PKR)
Aluminium foil container	1,000	4,704	10	47,040
Total				**47,040**

Table 19: Direct Labor

Personnel	Number of Personnel	Salary per Head (PKR)	Annual Salaries (PKR)
Production Supervisor	1	70,000	840,000
AluminiumFoil Container Making Machine Operator-Skilled	1	35,000	420,000
AluminiumFoil Container Making Machine Operator-Unskilled	2	25,000	600,000
Packing Operator-Unskilled	2	25,000	600,000
Loading/Unloading Operator-Unskilled	2	25,000	600,000
Total			**3,060,000**

9.5. Fixed Cost Estimate

Table 20 shows the estimated fixed cost of the project.

Table 20: Fixed Cost Estimate

Management Staff	Amount (PKR)
Management Staff	6,300,000
Building rental expense	1,728,000
Indirect Utilities	1,358,315
Promotional expense	1,051,050
Depreciation expense	1,187,593
Amortization of pre-operating costs	81,316
Total Fixed Cost	**11,706,274**

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 21.

Table 21: Financial Feasibility Analysis

Description	Project
IRR	69%
NPV (PKR)	38,247,593
Payback Period (years)	2.04
Projection Years	10
Discount rate used for NPV	25%

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 22.

Table 22: Financial Feasibility Analysis with 50% Debt

Description	Project
IRR	68%
NPV (PKR)	46,092,437
Payback Period (years)	2.08
Projection Years	10
Discount rate used for NPV	22%

9.8. Human Resource Requirement

The proposed manufacturing unit shall require the workforce as provided in Table 23.

Table 23: Human Resource

Personal	No. of Persons	Salary per Head (PKR)	Annual Salaries (PKR)
Production Supervisor	1	70,000	840,000
Aluminium Foil Container Making Machine Operator-Skilled	1	35,000	420,000
Aluminium Foil Container Making Machine Operator-Unskilled	2	25,000	600,000
Packing Operator	2	25,000	600,000
Loading/Unloading Operator	2	25,000	600,000
Account Officer	1	30,000	360,000
Admin and HR Officer	1	50,000	600,000
Sales & Marketing Officer	2	50,000	1,200,000
Procurment Officer	1	40,000	480,000
Mechanical Technician	1	50,000	600,000
Store Incharge	1	50,000	600,000
Driver	1	30,000	360,000
Office Boy	2	25,000	600,000
Security Guard	4	25,000	1,200,000
Sweeper	1	25,000	300,000
Total Cost (PKR)	**23**		**9,360,000**

10. CONTACT DETAILS

The contact details of all the major suppliers of machinery and equipment and raw materials are given in Table 24.

Table 24: Contact Details

Name of Supplier	Product	Location	Contact	Websit/ Email
Mega tech global	Supplier	MozaNanSukh,Saggina Bypass Road, Lahore - Pakistan	0336-4470088	http://www.megatechglobal.com/
Unique Packaging Lahore Disposable	Supplier	13 Jan Muhammad Rd, Urdu Bazar Lahore, Punjab 54000	0321-2207555	companyofquality@gmail.com
Shanghai Metal	Raw material supplier	20th Floor Yuan Mansion,738 Dongfang Road,Shanghai, China	+86 21 5830 9368	sales@shanghaimetal.com
Shanghai Silver Engineer Machinery Co. Ltd	Molds supplier	No.66 Xinlv Rd., Xinbang, Songjiang, Shanghai, China	0086-21-3352894	info@silverengineer.com
Dongying Besco Machine Tool Limited	Machine/ Mold supplier	4th Floor, International Trade Building, Dongying, Shandong, China		http://www.bescomt.com
Henan Tendeli Metallurgical Materials Co., Ltd.	Raw material supplier	No. 7, Anzhang Road, Anyang, Henan, China		http://www.htmmgroup.com

11. USEFUL LINKS

Table 25: 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
Government of Punjab	www.punjab.gov.pk
Government of Sindh	sindh.gov.pk/
Government of Balochistan	balochistan.gov.pk/
Government of Khyber Pakhtunkhwa	kp.gov.pk/
Government of Gilgit Baltistan	gilgitbaltistan.gov.pk/
Government of Azad Jammu & Kashmir	ajk.gov.pk/
Trade Development Authority of Pakistan	www.tdap.gov.pk
Securities and Exchange Commission of Pakistan	www.secp.gov.pk
State Bank of Pakistan	www.sbp.gov.pk
Federal Board of Revenue	www.fbr.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
Pakistan Stock Exchange (PSX)	www.psx.com.pk
Pakistan Standards and Quality Control Authority (PSQCA)	http://www.psqca.com.pk
Punjab Small Industries Corporation	https://www.psic.gop.pk/
Sindh Small Industries Corporation	https://ssic.gos.pk/
Government of KPK	https://small_industries_de.kp.gov.pk/
Government of Balochistan Industries and Commerce	https://balochistan.gov.pk/departments-download/industries-and-commerce/
Ministry National Food Security & Research	https://mnfsr.trancemedia.pk/
Punjab Food Department	https://food.punjab.gov.pk/food_security
Sindh Food Authority	http://sfa.gos.pk/
KP Food Safety & Halal Food Authority	https://kpfsa.gov.pk/

Balochistan Food Authority	https://bfa.gob.pk/
Pakistan Food Association	https://www.confectioneryproduction.com/organisation/the-pakistan-food-association/

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
Aluminum foil container		20,050,800	25,914,646	30,731,650	36,255,863	42,580,857	49,811,874	58,067,231	64,209,934	70,673,734	77,788,223
BBQ Grill Tray		15,523,200	20,062,952	23,792,245	28,069,055	32,965,825	38,564,032	44,955,276	49,710,917	54,715,149	60,223,141
Loaf Bread Pan		1,293,600	1,671,913	1,982,687	2,339,088	2,747,152	3,213,669	3,746,273	4,142,576	4,559,596	5,018,595
Round Pizza Pan		1,293,600	1,671,913	1,982,687	2,339,088	2,747,152	3,213,669	3,746,273	4,142,576	4,559,596	5,018,595
Round Universal Bake Pizza Plate		3,880,800	5,015,738	5,948,061	7,017,264	8,241,456	9,641,008	11,238,819	12,427,729	13,678,787	15,055,785
Total Revenue		**42,042,000**	**54,337,162**	**64,437,330**	**76,020,358**	**89,282,442**	**104,444,252**	**121,753,872**	**134,633,733**	**148,186,862**	**163,104,339**
Cost of sales											
Aluminum Foil Cost		17,710,560	21,117,875	25,031,721	29,519,551	34,657,265	40,530,227	47,234,404	51,989,334	57,222,927	62,983,368
Packing Cost		28,224	31,065	34,192	37,634	41,423	45,593	50,183	55,234	60,795	66,915
Direct Utilities Cost		240,372	283,934	333,407	389,503	453,015	524,824	605,913	660,667	720,369	785,467
Direct Labor		3,060,000	3,356,820	3,682,432	4,039,627	4,431,471	4,861,324	5,332,872	5,850,161	6,417,627	7,040,136
Machinery Maintenance Cost	23,000.00	276,000	303,784	334,365	368,024	405,072	445,849	490,732	540,132	594,505	654,352
Total cost of sales		21,315,156	25,093,479	29,416,117	34,354,341	39,988,246	46,407,818	53,714,103	59,095,528	65,016,222	71,530,238
Gross Profit		20,726,844	29,243,683	35,021,212	41,666,017	49,294,196	58,036,435	68,039,769	75,538,205	83,170,640	91,574,102
General administration & selling expenses											
Management Staff	525,000	6,300,000	6,911,100	7,581,477	8,316,880	9,123,617	10,008,608	10,979,443	12,044,449	13,212,761	14,494,399
Building rental expense	144,000	1,728,000	1,900,800	2,090,880	2,299,968	2,529,965	2,782,961	3,061,257	3,367,383	3,704,121	4,074,534
Indirect Utilities	113,193	1,358,315	1,481,061	1,614,900	1,760,833	1,919,953	2,093,453	2,282,632	2,488,905	2,713,820	2,959,058
Communications expense (phone, mail, internet,	42,000	504,000	552,888	606,518	665,350	729,889	800,689	878,355	963,556	1,057,021	1,159,552
Office vehicles running expense	78,750	945,000	1,040,130	1,144,836	1,260,083	1,386,932	1,526,549	1,680,222	1,849,364	2,035,534	2,240,444
Office expenses (stationery, entertainment etc.)	42,000	504,000	552,888	606,518	665,350	729,889	800,689	878,355	963,556	1,057,021	1,159,552
Promotional expense	87,588	1,051,050	1,358,429	1,610,933	1,900,509	2,232,061	2,611,106	3,043,847	3,365,843	3,704,672	4,077,608
Depreciation expense	98,966	1,187,593	1,187,593	1,187,593	1,187,593	1,187,593	1,187,593	797,698	2,207,610	2,207,610	2,207,610
Amortization of pre-operating costs	6,776	81,316	81,316	81,316	81,316	81,316	-	-	-	-	-
Subtotal		13,659,273	15,066,205	16,524,971	18,137,882	19,921,216	21,811,649	23,601,810	27,250,667	29,692,558	32,372,756
Operating Income		7,067,571	14,177,478	18,496,242	23,528,135	29,372,980	36,224,786	44,437,959	48,287,538	53,478,081	59,201,345
Other income 2											
Gain / (loss) on sale of machinery & equipment		-	-	-	-	-	-	1,150,000	-	-	
Gain / (loss) on sale of office equipment		-	-	-	-	-	-	442,225	-	-	
Gain / (loss) on sale of office vehicles		-	-	-	-	-	-	123,500	-	-	
Earnings Before Interest & Taxes		7,067,571	14,177,478	18,496,242	23,528,135	29,372,980	36,224,786	46,153,684	48,287,538	53,478,081	59,201,345
Subtotal		-	-	-	-	-	-	-	-	-	-
Earnings Before Tax		7,067,571	14,177,478	18,496,242	23,528,135	29,372,980	36,224,786	46,153,684	48,287,538	53,478,081	59,201,345
Tax		1,861,893	7,948,243	9,243,872	10,753,441	12,506,894	15,318,055	18,544,947	19,238,450	3,920,000	3,920,000
NET PROFIT/(LOSS) AFTER TAX		**5,205,678**	**6,229,235**	**9,252,369**	**12,774,695**	**16,866,086**	**20,906,730**	**27,608,737**	**29,049,088**	**49,558,081**	**55,281,345**

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											
Current assets											
Cash & Bank	1,000,000	4,499,321	6,559,898	8,941,018	11,514,785	14,195,687	16,479,069	27,720,413	55,797,972	103,708,314	183,949,137
Accounts receivable	-	-	-	-	-	-	-	-	-	-	-
Equipment spare part inventory	23,000	27,737	33,450	40,340	48,648	58,668	70,751	85,323	102,897	124,090	-
Raw material inventory	2,951,760	3,873,957	5,054,184	6,560,334	8,477,471	10,912,063	13,997,229	16,957,183	20,543,069	24,887,253	-
Finished goods inventory		1,776,263	2,091,123	2,451,343	2,862,862	3,332,354	3,867,318	4,476,175	4,924,627	5,418,019	5,960,853
Pre-paid building rent	144,000	158,400	174,240	191,664	210,830	231,913	255,105	280,615	308,677	339,544	-
Total Current Assets	4,118,760	10,335,678	13,912,896	18,184,699	23,114,596	28,730,685	34,669,472	49,519,709	81,677,242	134,477,219	189,909,990
Fixed assets											
Land	-	-	-	-	-	-	-	-	-	-	-
Building Infrastructure Renovation	179,080	161,172	143,264	125,356	107,448	89,540	71,632	53,724	35,816	17,908	-
Machinery & equipment	4,600,000	3,910,000	3,220,000	2,530,000	1,840,000	1,150,000	460,000	8,719,809	7,411,838	6,103,866	4,795,895
Furniture & fixtures	935,000	794,750	654,500	514,250	374,000	233,750	93,500	1,772,396	1,506,537	1,240,677	974,818
Office vehicles	494,000	419,900	345,800	271,700	197,600	123,500	49,400	752,660	639,761	526,862	413,963
Office equipment	1,768,900	1,503,565	1,238,230	972,895	707,560	442,225	176,890	3,353,146	2,850,174	2,347,202	1,844,230
Security against building	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000
Total Fixed Assets	8,408,980	7,221,387	6,033,794	4,846,201	3,658,608	2,471,015	1,283,422	15,083,734	12,876,125	10,668,515	8,460,906
Intangible assets											
Pre-operation costs	406,578	325,262	243,947	162,631	81,316	-	-	-	-	-	-
Total Intangible Assets	406,578	325,262	243,947	162,631	81,316	-	-	-	-	-	-
TOTAL ASSETS	**12,934,318**	**17,882,327**	**20,190,636**	**23,193,531**	**26,854,520**	**31,201,700**	**35,952,894**	**64,603,444**	**94,553,367**	**145,145,735**	**198,370,896**
Liabilities & Shareholders' Equity											
Current liabilities											
Accounts payable		2,345,170	2,840,281	3,425,010	4,115,753	4,932,114	5,897,578	6,939,390	7,840,225	8,874,512	6,818,327
Total Current Liabilities	-	2,345,170	2,840,281	3,425,010	4,115,753	4,932,114	5,897,578	6,939,390	7,840,225	8,874,512	6,818,327
Other liabilities											
Shareholders' equity											
Paid-up capital	12,934,318	12,934,318	12,934,318	12,934,318	12,934,318	12,934,318	12,934,318	12,934,318	12,934,318	12,934,318	12,934,318
Retained earnings		2,602,839	4,416,037	6,834,203	9,804,449	13,335,268	17,120,999	44,729,736	73,778,824	123,336,905	178,618,251
Total Equity	12,934,318	15,537,157	17,350,355	19,768,521	22,738,767	26,269,585	30,055,317	57,664,054	86,713,142	136,271,223	191,552,569
TOTAL CAPITAL AND LIABILITIES	**12,934,318**	**17,882,327**	**20,190,636**	**23,193,531**	**26,854,520**	**31,201,700**	**35,952,894**	**64,603,444**	**94,553,367**	**145,145,735**	**198,370,896**

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
Operating activities											
Net profit		5,205,678	6,229,235	9,252,369	12,774,695	16,866,086	20,906,730	27,608,737	29,049,088	49,558,081	55,281,345
Add: depreciation expense		1,187,593	1,187,593	1,187,593	1,187,593	1,187,593	1,187,593	797,698	2,207,610	2,207,610	2,207,610
amortization of pre-operating costs		81,316	81,316	81,316	81,316	81,316	-	-	-	-	-
Finished goods inventory		(1,776,263)	(314,860)	(360,220)	(411,519)	(469,492)	(534,964)	(608,857)	(448,452)	(493,391)	(542,835)
Equipment inventory	(23,000)	(4,737)	(5,713)	(6,889)	(8,308)	(10,020)	(12,083)	(14,572)	(17,574)	(21,193)	124,090
Raw Material Iventory	(2,951,760)	(922,197)	(1,180,228)	(1,506,149)	(1,917,137)	(2,434,592)	(3,085,166)	(2,959,954)	(3,585,886)	(4,344,184)	24,887,253
Pre-paid building rent	(144,000)	(14,400)	(15,840)	(17,424)	(19,166)	(21,083)	(23,191)	(25,510)	(28,062)	(30,868)	339,544
Accounts payable		2,345,170	495,111	584,728	690,743	816,361	965,463	1,041,813	900,835	1,034,287	(2,056,184)
Cash provided by operations	(3,118,760)	6,102,160	6,476,614	9,215,323	12,378,216	16,016,169	19,404,381	25,839,354	28,077,559	47,910,342	80,240,823
Financing activities											
Issuance of shares	12,934,318	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activities	12,934,318	-	-	-	-	-	-	-	-	-	-
Investing activities											
Capital expenditure	(8,815,558)	-	-	-	-	-	-	(14,598,010)	-	-	-
Acquisitions											
Cash (used for) / provided by investing activities	(8,815,558)	-	-	-	-	-	-	(14,598,010)	-	-	-
NET CASH	1,000,000	6,102,160	6,476,614	9,215,323	12,378,216	16,016,169	19,404,381	11,241,344	28,077,559	47,910,342	80,240,823

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 26: Operating Cost Assumptions

Description	Details	
Operating costs growth rate	10.1%	
Communication expenses	8% of Management staff expense	
Office expenses (stationery, janitor, etc.)	8% of Management staff expense	
Promotional Expense	2.5% of revenue	
Machinery Maintenance – Cost	6% of Cost of Machinery	
Office vehicles running expense	15% of Management staff expense	
Depreciation		
Building	10%	of Building Cost
Machinery and Equipment	15%	of Cost
Office Equipment/Office Vehicle/Furniture and Fixture	15%	of Cost

13.2. Revenue Assumptions

Table 27: Revenue Assumptions

Description	Details
Sale price growth rate	10.1%
Capacity utilization	60%
Capacity utilization growth rate	5%
Maximum capacity	90%

13.3. Financial Assumptions

Table 28:Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate	25%

13.4. Debt Related Assumptions

Table 29: Debt Related Assumption

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	50:50
Discount Rate	22%
Debt Grace Period	1 Years
Interest Rate (KIBOR+3%)	19%

13.5. Cash Flow Assumptions

Table 30: Cash Flow Assumptions

Description	Details
Accounts receivable cycle (in days)	-
Accounts payable cycle (in days)	30 Days
Finished Goods Inventory	30 Days

Small and Medium Enterprises Development Authority

HEAD OFFICE

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

www.smeda.org.pk, **helpdesk@smeda.org.pk**

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
3rd 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	5TH 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