Pre-feasibility Study

PRODUCTION UNIT OF BAKING POWDER

November 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, 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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1. DISCLAIMER

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2. EXECUTIVE SUMMARY

Baking powder is a mixture that is used as a chemical leavening agent[1] in confectionary products and biscuit industry to increase the volume and lighten the texture of baked products. Baking powder has three ingredients, baking soda (Sodium Bicarbonate, $NaHCO_3$), Cream of Tartar (Potassium Bi-tartrate, $KC_4H_5KO_6$) and Corn Starch (a base, an acid, and a filler respectively). Baking powder is made by combining these solids in a unique proportion of 1:2:1. Baking powder should be kept in a covered container in the cool dark place away from moisture. If it gets wet, it cannot produce the required leavening action for baking products.

In addition to bakery and confectionary units, baking powder is also used by households, laundry units and pharmaceutical industry. In bakery, it is used for baking large variety of products; such as cakes, breads, doughnuts, etc. In households, it is used in different types of cooking recipes. In addition, it is also used as a repellent against insects and an effective product to clean the domestic pots and pans. In laundry shops, it is used for removing stains from the clothes. In pharmaceutical industry, it is mainly used in production of effervescent salts.[2]

This "Pre-feasibility Document" provides details for setting up a "Production Unit of Baking Powder". The unit is established to produce quality baking powder for domestic and commercial uses. The proposed business may be established in major cities such as Karachi, Lahore, Sargodha, Peshawar, Rawalpindi, Quetta, Bahawalpur, Mardan, Faisalabad, Sialkot, Hyderabad, Gujranwala, Multan, etc. In addition to large cities, this project may also be established in smaller cities and towns all over the country.

The proposed business requires a total investment of PKR 4.32 million. This includes capital investment of PKR 3.17 million and working capital of PKR 1.15 million. This project is financed through 100% equity in which case the Net Present Value (NPV) is PKR 17.11 million with an Internal Rate of Return (IRR) of 54% and a Payback period of 2.67 years. The proposed production unit will have maximum capacity of producing 56,000 kg of baking powder per year; which translates into 274,400 packets of baking powder. It is assumed that during the first year of operations, the unit will attain 60% capacity utilization to produce 33,600 kg of baking powder which is equal to 164,640 packets of baking powder. The operational capacity is assumed to increase at the rate of 5% per annum to reach a maximum of 90% in year 7. Further, this project is expected to generate Gross Annual Revenues of PKR 21.72 million during 1st year of operations, Gross Profit (GP) ratio ranging from 26% to 29% and Net Profit (NP) ratio ranging from 6% to 14% during the projection period of 10 years. The proposed project will achieve its estimated breakeven point at capacity of 40% (22,518 kg which is equal to 110,338 packets) with an annual revenue of PKR 14.56 million.

The proposed project may also be established using leveraged financing. At 50% financing at a cost of KIBOR+3%, the proposed production unit of baking powder

[1] Leaving agent is a substance used in dough to make it rise, such as yeast or baking powder.
[2] Effervescent salts have the property of forming bubbles when dissolved in liquid.

provides Net Present Value (NPV) of PKR 19.43 million, Internal Rate of Return (IRR) of 53% and Payback period of 2.72 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 5% to 14% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 43% (24,242 kg) with annual revenue of PKR 15.67 million.

The proposed project will provide employment opportunities to around 10 people including the owner. The legal business status of this project is proposed as “Sole Proprietorship”.

3. INTRODUCTION TO SMEDA

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

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

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

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

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

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

4. PURPOSE OF THE DOCUMENT

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

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

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attain 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 set up and its successful management.

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

5. BRIEF DESCRIPTION OF PROJECT & SERVICES

This document provides details for establishing a production unit for baking powder. Baking powder is a mixture that is used as a chemical leavening agent in bakery products to increase the volume and lighten the texture of baked products. It works by releasing carbon dioxide gas into the dough through an acid–base reaction, creating bubbles in the wet mixture to expand and thus leavening the mixture. The carbon dioxide gas produced through this reaction leads to inflating different baked products like cookies, cakes, and pancakes. Baking Powder has three ingredients; baking soda (Sodium Bicarbonate, $NaHCO_3$), Cream of Tartar (Potassium Bitartrate, $C_4H_5KO_6$) and Corn Starch (a base, an acid, and a filler respectively). Baking powder is made by mixing these three ingredients in a unique proportion of 1:2:1.

Baking soda and baking powder are two different products. Baking soda is simply Sodium Bicarbonate which requires an acid and a liquid to become activated and make baked goods rise. Whereas, baking powder is a mixture of Sodium Bicarbonate and an acid and it only needs a liquid to become activated. Because baking powder combines both an acid and a base, it eliminates the need for ingredients like buttermilk or sour cream to activate sodium bicarbonate, allowing milk or even water to set off the reaction. Baking powder also includes cornstarch to improve its stability and consistency by absorbing moisture from the environment wherein it is stored. Baking soda has the chemical formula $NaHCO_3$, whereas baking powder, being a mixture, does not have a chemical formula. Baking powder should be kept in a covered container in the cool dark place away from moisture.

Baking powder can be used in bakery products with the aim to meet different preferences and taste of customers. Baking powder has both domestic and industrial uses. Increasing consumption of bakery items directly increases the demand for baking powder. Changing trends and life styles have significant impact on this industry. With more and more Pakistanis adopting new eating habits, the demand for delicious and healthy bakery and confectionary items is increasing at a rapid pace.

Baking powder has different uses in laundry sector also. It is used as a deodorizer (used on carpets for sucking up the set-in bad odors). It is also used as a detergent booster (remove odors from clothes during the washing process) and as a degreaser removing grease from the stains).

Baking powder is also used in household baking recipes. It is also used to keep insects away from the homes, as a freshener for shoes, as a washing agent to remove dirt from the pans and pots which otherwise cannot be scrubbed or cleaned easily. It is also used to remove marker stains from the walls.

Baking soda is also used in pharmaceutical industry in the production of effervescent salts; aimed at preventing excessive stomach acidity. The antifungal properties of baking powder also help in the treatment of nail infections.

The proposed manufacturing unit of baking powder will be equipped with basic blending and packaging machine, electric sifter shaker machine, trollies, weighing scale, buckets and stainless-steel scoops.

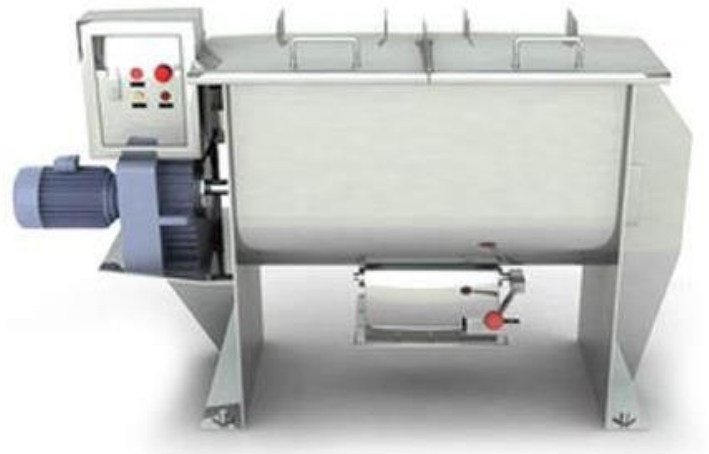
5.1. Machinery and Equipment

Machinery and equipment required for “Production Unit of Baking Powder” are briefly discussed below:

Ribbon Blender Mixer

Ribbon blenders consist of a U-shaped horizontal trough and especially fabricated ribbon or paddle agitator. Ribbon blenders feature stationary U-shaped vessels with flat cover sections on top and a discharge valve at the bottom. The ribbon agitator consists of a set of inner and outer helical blades pitched in opposite for fast and thorough blending. The outer ribbon moves materials in one direction and the inner ribbon moves the materials in the opposite direction. The proposed machine has a capacity to mix 50 kg raw material per hour. Materials of different sizes and bulk densities are mixed efficiently to create a homogenous blend. A variety of discharge valves are available including knife gate valves for simple and reliable operation. Figure 1 shows ribbon blender mixer.

Figure 1: Ribbon Blender Mixer



Electric Sifter Shaker Machine

Electric shifter shaker machine includes vibratory screen, vertical vibration motor and filter. Vibratory screen traps the rough and thick particles that come along with the powder (blended raw material) which is sifted so that they do not end up in the final product. Vertical vibration motor is used for producing vibration, which helps the powder to pass through the filter. The finest powder is discharged automatically from the filter to the bucket. This machine can be operated continuously. Machine is usually made up of high-quality materials such as stainless steel or plastic. It has a capacity to mesh 60 kg powder per hour. Figure 2 shows electric sifter machine.

Figure 2: Electric Sifter Shaker Machine

Semi-Automatic Powder Packing Machine

The machine is specially designed for packing non-free flowing powder products. This machine has a packing capacity of 10-20 packs/minute (depending on the packet weight). Figure 3 shows semi-automatic powder packing machine.

Figure 3: Semi-Automatic Powder Packing Machine

Weigh Scale

Weigh Scale is used to measure the required weight of the raw materials to be transferred into the ribbon blender for mixing. Figure 4 shows electronic weigh scale.

Figure 4: Electronic Weigh Scale

Platform Trolley

A platform trolley will be used in the proposed production unit to move/transfer raw material sacks and buckets filled with the raw material ingredients and the single homogenous mixture (that is obtained from blender mixer) for further processing. Figure 5 shows a platform trolley.

Figure 5: Platform Trolley

Plastic Bucket

Plastic bucket is used for transferring ingredients to the blender mixer, then moving homogenous mixture to the sifter shaker and for transferring the finished products to the packing machine for packing.

Figure 6: Plastic Bucket

Stainless Steel Scoop

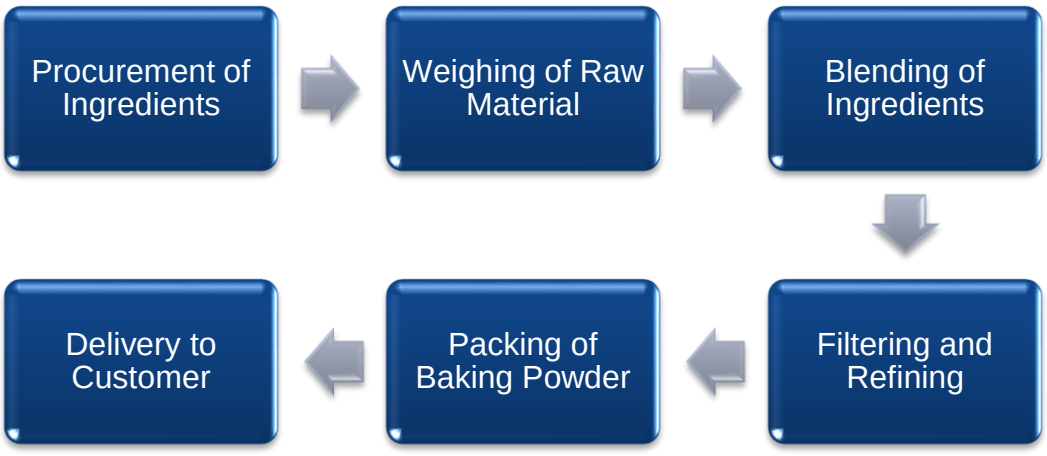
Stainless steel scoops are used for transferring the ingredients into the buckets as well as from buckets to the machines. Figure 7 shows a stainless steel scoop.

Figure 7: Stainless Steel Scoop

5.2. Process Flow of Production Unit of Baking Powder

The process flow of production unit of baking powder is shown in Figure 8.

Figure 8: Process Flow of Production Unit of Baking Powder



Brief description of process flow is provided below:

Procurement of Ingredients

For manufacturing baking powder, three ingredients are required; baking soda

(Sodium Bicarbonate, $NaHCO_3$), Cream of Tartar (Potassium Bitartrate, $C_4H_5KO_6$) and Corn Starch. All of these ingredients are easily available in the local markets of Pakistan.

Weighing of Raw Material

For manufacturing baking powder, the three raw materials have to be mixed in a unique ratio of 1:2:1. Lack of following this recipe will lead to baking powder losing its quality. For maintaining this ratio, the raw materials are weighed on an electronic weigh scale in the recommended quantities before their blending.

Blending of Ingredients

All three ingredients (baking soda, cream of tartar and corn starch) are put into a bucket through stainless steel scoop and then transferred to blender mixer machine manually by the labor. This mixer has large, stainless-steel blades that thoroughly mix the three ingredients into a single, homogeneous blend. After the blending process is complete, the homogenous mixture is discharged through valve of blender mixer into the bucket.

Filtering and Refining

The homogenous mixture in the bucket is transferred to the sifter shaker machine manually by the labor using scoops which scalps the material and remove fines and grade material (the pure material left after the filtration). Sifting machine is commonly used to break any lumps in the mixture and passes it forward through the vibrating screen for filtering. The screening accuracy is as high as 90-99%. In this process, up to 99% pure baking powder is obtained and left over rough and thick particles are wasted.

Packing of Baking Powder

The prepared baking powder is discharged through sifter shaker machine into the bucket. It is then transferred to semi-automatic powder packing machine manually by labor using scoops where baking powder is dispensed into 100 grams, 250 grams, 500 grams and 1 kilogram packets. 100 grams and 250 grams packets are packed in simple plastic packets and then in attractive printed box packing while 500 grams and 1 kg packets are packed in attractive printed plastic packets.

Delivery to Customers

A sales person delivers the packets to local grocery stores, hotels, restaurants, bakeries and other sales outlets. The product is sold on cash basis but for reliable and long-term customers product is sold on 45 days credit period.

5.3. Installed and Operational Capacities

The proposed production unit will have maximum capacity of producing 56,000 kg of baking powder per year which translates into 274,400 packets of different sizes. It is assumed that during the first year of operations, the unit will attain 60% capacity utilization to produce 33,600 kg of baking powder which is equal to 164,640 packets.

The operational capacity is assumed to increase at the rate of 5% per annum to reach a maximum of 90% in year 7. Table 1 shows details of maximum annual capacity and operational capacity utilized during first year of operations.

Table 2 shows details of maximum annual capacity and operational capacity utilized in packets during 1st year of operations.

Table 1: Installed and Operational Capacity in KG

Particulars	Ratio	Ribbon Blender Mixer Capacity per Batch (kg)	Time per Batch (Hours)	Batch Processed Per Day	Batch Processed Annually	Annual Production (kg)	Annual Production @ 60% (kg)
Baking Powder	100%	50	2.0	4	1,120	56,000	33,600

Table 2: Installed and Operational Capacity-Packets

Particulars	Production Ratio	Annual Production Product wise (kg)	Annual Production @ 60% Product wise(kg)	Per Packet weight (kg)	Annual production (Packets)	Annual Production @ 60% (Packets)
Baking Powder-100 gram	35%	19,600	11,760	0.10	196,000	117,600
Baking Powder-250 gram	20%	11,200	6,720	0.25	44,800	26,880
Baking Powder-500 gram	15%	8,400	5,040	0.50	16,800	10,080
Baking Powder-1 kilogram	30%	16,800	10,080	1	16,800	10,080
Total		**56,000**	**33,600**		**274,400**	**164,640**

6. CRITICAL FACTORS

Before making the decision to invest in "Production Unit of Baking Powder" business, one should carefully analyze the associated risk factors. The important considerations in this regard include:

- The entrepreneur should have prior technical knowledge and experience of the baking business.
- The raw material used for making the final product should meet the required quality standards.
- The business must comply with standards set by provincial Food Authorities and Pakistan Standards & Quality Control Authority (PSQCA) to obtain required license.
- The availability of trained resources is very critical for production of baking powder.
- The pricing and marketing strategy will play an important role in attracting the target customers.
- The business must maintain consistent quality of the baking powder, as quality will be critical factor in retaining the customers and this will also help in obtaining continuous orders from the customers.

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

A production unit of baking powder can be established in major cities of Pakistan such as Karachi, Lahore, Sargodha, Peshawar, Rawalpindi, Quetta, Bahawalpur, Mardan, Faisalabad, Sialkot, Hyderabad, Gujranwala, Multan or any other major city with a large population. The demand of baking powder in these areas is high due to presence of large number of wholesalers, retail shops, bakeries, restaurants, laundries and presence of households in large numbers. In addition to large cities, the project may also be established in smaller cities and towns where demand for baking powder is high but current production units are not able to meet the demand in such areas.

8. POTENTIAL TARGET CUSTOMERS/MARKETS

The potential target customers of the proposed business mainly comprise of bakery shops, biscuit manufacturing units, general household consumers, laundries, general retailers and wholesalers, restaurants, food processing units and pharmaceutical industry. Other potential customers of baking powder business are supermarkets, hypermarkets and industrial buyers engaged in producing hamburgers, pizzas and breads. The demand from these market segments is driven by the presence of large population in the above stated cities.

The main customers of the proposed unit are confectionary units and biscuit industry. The Pakistani confectionary market recorded a cumulative annual growth rate (CAGR)

of 9.4% during last 5 years (from 2016 to 2020). Whereas, the Pakistani biscuit market grew at CAGR of 9.1% during last 5 years (from 2016 to 2020).[3] The sizes of biscuits and confectionary industry were PKR 80 billion and PKR 35 billion in 2020 respectively.

Traditional occasions such as religious festivals (Eids and Ramadan) and wedding season's festivities usually lead to an overall increase in demand of baking powder.

No documented data is available about total number of baking powder producing units in Pakistan. However, the results of research indicate that number of large to small scale units are working in different provinces of Pakistan. Majority of the units are working in Karachi, whereas some units are also operating in Khyber Pakhtunkhwa and Punjab. Majority of baking powder brands in Pakistani market are local brands. Some of the local producers of baking powder in Pakistan are Bakea, SAFA, Rossmoor, PARAS, whereas Pearce Duff an international brand is also available in the local market of Pakistan.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of the Production Unit of Baking Powder. Various costs and revenue related assumptions along with results of the analysis are outlined in this section.

The projected Income Statement, Cash Flow Statement and Balance Sheet are attached as annexure 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 3 provides fixed and working capital requirements for establishment and operations of the Production Unit of Baking Powder.

Table 3: Project Cost

Description of Costs	Amount (PKR)	Reference
Land	-	9.1.1
Building Renovation Costs	225,300	9.1.2
Machinery & Equipment	1,400,000	9.1.3
Furniture & Fixtures	280,000	9.1.4
Office Equipment	425,000	9.1.5
Office Vehicles	334,000	9.1.6

[3] Food Products-An Overview-2020-By PACRA

Security Against Building	420,000	9.1.7
Pre-operating Costs	89,328	9.1.8
Total Capital Cost	**3,173,628**	
Equipment spare part inventory	11,667	
Raw material inventory	493,500	
Upfront building rent	140,000	
Cash	500,000	
Working Capital	**1,145,167**	9.1.9
Total Project Cost	**4,318,795**	

9.1.1. Land

The production unit of baking powder will be established in a rented building to avoid the high cost of land. Suitable location for setting up the proposed production unit can be easily found on rent. Therefore, no land cost has been added to the project cost. Total space requirement for the proposed unit has been estimated as 1,125 sq. feet (5 Marla). The breakup of the space requirement is provided in Table 4.

Table 4: Breakup of Space Requirement

Description	% Break-Up	Area (Sq. Ft.)
Executive Office	11%	120
Machine Area	67%	750
Store	13%	150
Kitchen	5%	55
Washrooms	4%	50
Total	**100%**	**1,125**

9.1.2. Building

There will be no cost of building construction since the proposed business will be started in rented premises. However, there will be a renovation cost required to make the building usable for the business. The proposed project requires electricity load of 6 KW for which an electricity connection under the Industrial Supply Tariff three phase will be required. Building rent of PKR 140,000 per month has been included in the operating cost. Table 5 provides details of building renovation cost.

Table 5: Building Renovation Cost

Cost Item	Unit of Measurement (UOM)	Total Units	Cost/Unit (PKR)	Total Cost (PKR)
Paint Cost	Liter	41	500	20,700

Labour Cost- Paint	Sq. Feet	4,140	10	41,400
Tiles Cost	Sq. Feet	920	120	110,400
Labour Cost- Tiles	Sq. Feet	920	40	36,800
Curtains	Units	2	3,000	6,000
Blinds	Units	2	5,000	10,000
Total Cost				**225,300**

9.1.3. Machinery and Equipment Requirement

Table 6 provides details of machinery and equipment required for establishing Production Unit of Baking Powder.

Table 6: Machinery and Equipment Requirement

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Ribbon Blender Mixer (50kg/hour)	1	300,000	300,000
Electric Sifter Machine (60kg/hour)	2	250,000	500,000
Semi-Automatic Powder Packing Machine (10-20 packs/minute)	1	500,000	500,000
Electronic Weigh Scale (500 kg)	1	50,000	50,000
Platform Trolley	5	10,000	50,000
Stainless Steel Scoop	5	500	2,500
Plastic Bucket	10	500	5,000
Total Cost			**1,400,000**

9.1.4. Furniture & Fixtures Requirement

Table 7 provides details of the furniture and fixture requirement of the project.

Table 7: Furniture and Fixtures Requirement

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Executive Table	1	40,000	40,000
Executive Chairs	1	20,000	20,000
Staff Chairs	6	10,000	60,000
Office Table	2	25,000	50,000

Sofa Sets	1	35,000	35,000
Wall racks for Office	2	15,000	30,000
Wall racks for Store	3	15,000	45,000
Total			**280,000**

9.1.5. Office Equipment Requirement

Details of office equipment required for the project is provided in Table 8.

Table 8: Office Equipment Requirement

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Laptop	1	80,000	80,000
Printer	1	40,000	40,000
Wi-Fi/Internet Router	1	5,000	5,000
Air Conditioners (1.5 Ton Invertor)	2	90,000	180,000
LED TV	1	40,000	40,000
Water Dispenser	1	20,000	20,000
Ceiling Fan	8	5,000	40,000
Security Cameras - 2MP	4	2,000	8,000
Digital Video Recorder (DVR)	1	12,000	12,000
Total Cost			**425,000**

9.1.6. Office Vehicle Requirement

Details of office vehicle required for the project is provided in Table 9.

Table 9: Office Vehicle Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Registration fee	Total Cost (PKR)
Loader Rickshaw	1	250,000	2,500	252,500
Motorcycle	1	80,000	1,500	81,500
Total Cost				**334,000**

9.1.7. Security against Building

Details of security against building for the project are provided in Table below;

Table 10: Security against Building

Cost Item	Months	Unit Cost (PKR)	Total Cost (PKR)
Security Against Building	3	140,000	420,000
Total (PKR)			**420,000**

9.1.8. Pre-Operating Cost

Details of pre-operating cost for the project are provided in Table 11.

Table 11: Pre-Operating Cost

Cost Item	Number / Months	Hiring before Year 0	Unit Cost (PKR)	Total Cost (PKR)
Labor Skilled	1	1	25,000	25,000
Office Boy	1	1	20,000	20,000
Security Guard	1	1	25,000	25,000
Utilities expense				19,328
Total (PKR)				**89,328**

9.1.9. Working Capital Requirements

Table 12 provides details of working capital requirements for the project.

Table 12: Working Capital Requirements

Cost Item	No. of Months	Unit Cost (PKR)	Total (PKR)
Equipment spare part inventory	1	11,667	11,667
Raw material inventory	0.5	987,000	493,500
Upfront building rent	1	140,000	140,000
Cash		500,000	500,000
Total			**1,145,167**

9.2. Breakeven Analysis

Breakeven analysis is provided in Table 13.

Table 13: Breakeven Analysis

Particulars	Amount First Year (PKR)	Ratios
Sales	21,718,900	100%
Variable Cost	16,745,213	77%

Contribution	4,973,687	23%
Fixed Cost	3,333,248	15%
Contribution Margin	23%	
Breakeven		
Breakeven (kg)		22,518
Breakeven (Packets)		110,338
Breakeven Revenue (PKR)		14,555,495
Breakeven Capacity		40%

9.3. Revenue Generation

Table 14 provides details for revenue generation of the Production Unit of Baking Powder during the first year of operations, based on 60% capacity utilization.

Table 14: Revenue Generation

Products	Annual Capacity (Packets)	Initial Capacity per Year @60%	Quantity Sold (Packets)[4]	Price per Packet (PKR)	Revenue per Year (PKR)
Baking Powder-100 gram packet	196,000	117,600	112,700	75	8,452,500
Baking Powder-250 gram packet	44,800	26,880	25,760	170	4,379,200
Baking Powder-500 gram packet	16,800	10,080	9,660	320	3,091,200
Baking Powder-1 kilogram packet	16,800	10,080	9,660	600	5,796,000
Total	**274,400**	**164,640**	**157,780**		**21,718,900**

9.4. Variable Cost Estimate

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

Table 15: Variable Cost Estimate

Description of Costs	Total Cost (PKR)
Raw Material Cost	11,844,000
Utilities Cost	122,121

[4] The quantity sold is different from the initial production due to the maintaining half month finished goods inventory.

Direct Labor	2,100,000
Machinery Maintenance – Cost	140,000
Packing Cost	502,992
Box Packing Cost	1,209,600
Cartons for Packaging	241,500
Total Variable Cost (PKR)	**16,160,213**

Table 16: Raw Material Cost

Cost Item	Consumption of raw material in 1 kg Baking Powder (kg)	Cost per kg (PKR)	Total Cost (PKR)
Sodium Bi-carbonate	0.25	380	95
Cream of Tartar	0.50	480	240
Corn starch	0.25	70	18
Total Cost (PKR) (A)			**353**
Production for the year (kg) (B)			238,561
Total Cost (PKR) (A*B)			**11,844,000**

Table 17: Direct Labor

Post	No.of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Production Supervisor	1	40,000	480,000
Labor Skilled	3	25,000	900,000
Labor Unskilled	3	20,000	720,000
Total Direct Labor Cost (PKR)			**2,100,000**

Table 18: Machinery Maintenance Cost

Cost Item	Machinery Cost (PKR)	Rate	Total Cost (PKR)
Maintenance Cost	1,400,000	10%	140,000
Total (PKR)			**140,000**

Table 19: Packing Cost

Cost Item	Cost/kg (PKR)	Consumption per packet (Gram)	Cost per packet (PKR)	No. of Packets Produced	Total Cost (PKR)
Packing Cost-100 gram	800	3	2.4	117,600	317,520
Packing Cost-250 gram	800	4	3.2	26,880	96,768
Packing Cost-500 gram	800	5	4.0	10,080	40,320
Packing Cost-1 kg	800	6	4.8	10,080	48,384
Total (PKR)					**502,992**

Table 20: Box Packing Per Unit Cost

Cost Item	Unit Cost (PKR)
Printed Box Packing - 100 gram	8
Printed Box Packing - 250 gram	10

Table 21: Carton Packing Per Unit Cost

Cost Item	Packets per carton (packet)	No. of cartons	Unit Cost (PKR)
Cartons for Packaging-100grams	30	392	50
Cartons for Packaging-250grams	24	280	50

Table 22: Variable cost Assumptions

Description of Costs	Basis
Communications expense (phone,mail, internet, etc.)	20% of management expense
Office vehicles running expense	20% of management expense
Office expenses (stationery, entertainment, janitorial services, etc.)	25% of management expense5

9.5. Fixed Cost Estimate

Details of fixed cost for the project are provided in

Table 23.

Table 23: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Staff salaries	900,000
Building rental expense	1,680,000
Promotional expense	108,595
Utilities	109,814
License,Permits,etc.	20,000
Depreciation expense	388,380
Amortization of pre-operating costs	17,866
Bad Debt expense	108,595
Communications expense (phone,mail, internet, etc.)	180,000
Office vehicles running expense	180,000
Office expenses (stationery, entertainment, etc.)	225,000
Total Fixed Cost	**3,918,250**

Table 24: Staff Salaries

Post	No.of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Sales Persons	1	30,000	360,000
Office Boy	1	20,000	240,000
Security Guard	1	25,000	300,000
Total Cost (PKR)			**900,000**

Table 25: License, Permits, etc.*

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

License, Permits, etc. are expense 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 is PKR 13,000.

Table 26: Fixed Cost Assumption

Description of Costs	Rationale
Promotional expense	0.5%of revenue
Bad Debt expense	0.5%of revenue
Depreciation	
Renovation	10%of Building 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 27.

Table 27: Financial Feasibility Analysis

Description	Project
IRR	54%
NPV (PKR)	17,105,599
Payback Period (years)	2.67
Projection Years	10
Discount Rate used for NPV	15%

9.7. Financial Feasibility with 50% Debt Financing

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 28.

Table 28: Financial Feasibility Debt Financing

Description	Project
IRR	53%
NPV (PKR)	19,429,793
Payback Period (years)	2.72
Projection Years	10
Discount Rate used for NPV	13%

9.8. Human Resource Requirement

For the 1st year of operations, the human resource requirements are projected in Table 29.

Table 29: Human Resource Requirement

Post	No.of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Production Supervisor	1	40,000	480,000
Labor Skilled	3	25,000	900,000
Labor Unskilled	3	20,000	720,000
Sales Person	1	30,000	360,000
Office Boy	1	20,000	240,000
Security Guard	1	25,000	300,000
Total	**9**		**3,000,000**

10. CONTACT DETAILS

Details of suppliers of machinery and equipment for the proposed business are provided in Table 30.

Table 30: Contact Details

Name of Supplier / Manufacturer	Contacts Number	Email Address
Engineering Pk (OLX) (Gujranwala)	0300-1510014	-
SAMA Engineering (Karachi)	0345-2266203	www.samaengineering.com
Abdullah Packing Machinery (Lahore)	0345-4635761	www.abdullahpackingmachinery.com
Saleem & Sons Engineering (Lahore)	0321-9052399	www.saleemengineering.com
V7 Packaging (Islamabad)	0313 1722899	www.v7packaging.com
Alsaif Plastic Wholesale (Quetta)	0315-2856456	-
Shahzad Plastic Store (Peshawar)	0315-9888787	-
Raja Shabeer Karyana Store (Azad Jammu and Kashmir)	0334-8613142	www.rahshiplog.com
Yousaf Packing Machines (Rawalpindi)	0334 5859029	

11. USEFUL LINKS

Table 31: Useful Links

Name of Organization	Website
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Khyber Pakhtunkhwa	www.kp.gov.pk
Government of Azad Jammu and Kashmir	www.ajk.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Punjab Food Authority	www.pfa.gop.pk
Sindh Food Authority	www.sfa.gos.pk
Food Department Government of Balochistan	www.balochistan.gov.pk/tender-categories/food-department/
Food Safety and Halal Food Authority Khyber Pakhtunkhwa	www.kpfsa.gov.pk
Pakistan Chemical Manufacturers Association	www.petrolsolution.website
Pakistan Tibbi Pharmaceutical manufacturers Association	www.ptpma.org
Punjab Small Industries Corporation	www.psic.gop.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Small Industries Development Board, Khyber Pakhtunkhwa	www.sidbkp.com
Industries and Commerce Department Balochistan	www.balochistan.gov.pk/departments/industries-and-commerce/

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-100 gram (PKR)	8,452,500	10,078,695	11,946,641	14,088,431	16,540,481	19,343,441	22,542,980	24,812,307	27,310,079	30,059,293
Revenue-250 gram (PKR)	4,379,200	5,221,772	6,189,604	7,299,149	8,569,609	10,021,886	11,679,411	12,855,138	14,149,222	15,573,577
Revenue-500 gram (PKR)	3,091,200	3,685,913	4,369,035	5,152,341	6,049,077	7,074,143	8,244,290	9,074,215	9,987,686	10,993,113
Revenue-1 kg (PKR)	5,796,000	6,911,086	8,191,941	9,660,639	11,342,019	13,264,019	15,458,043	17,014,153	18,726,911	20,612,087
Total Revenue	**21,718,900**	**25,897,465**	**30,697,220**	**36,200,559**	**42,501,185**	**49,703,489**	**57,924,724**	**63,755,812**	**70,173,898**	**77,238,070**
Cost of sales										
Raw Material cost	11,844,000	14,122,654	16,740,053	19,741,305	23,177,169	27,104,734	31,588,176	34,768,052	38,268,036	42,120,351
Utilities Cost	122,121	133,156	145,189	158,310	172,615	188,214	205,222	223,768	243,989	266,037
Direct Labor	2,100,000	2,303,700	2,527,159	2,772,293	3,041,206	3,336,203	3,659,814	4,014,816	4,404,254	4,831,466
Machinery Maintenance - Cost	140,000	154,093	169,605	186,679	205,471	226,155	248,922	273,980	301,561	331,918
Packing Cost	502,992	599,762	710,918	838,375	984,290	1,151,086	1,341,489	1,476,533	1,625,170	1,788,771
Box Packing	1,209,600	1,442,314	1,709,622	2,016,133	2,367,030	2,768,143	3,226,026	3,550,780	3,908,225	4,301,653
Cartons for Packaging	241,500	287,963	341,334	402,527	472,586	552,671	644,085	708,923	780,288	858,837
Total cost of sales	16,160,213	19,043,643	22,343,880	26,115,622	30,420,368	35,327,207	40,913,735	45,016,851	49,531,522	54,499,033
Gross Profit	5,558,687	6,853,822	8,353,339	10,084,937	12,080,818	14,376,283	17,010,989	18,738,961	20,642,376	22,739,037
General administration & selling expenses										
Management Staff	900,000	987,300	1,083,068	1,188,126	1,303,374	1,429,801	1,568,492	1,720,636	1,887,537	2,070,628
Building rental expense	1,680,000	1,848,000	2,032,800	2,236,080	2,459,688	2,705,657	2,976,222	3,273,845	3,601,229	3,961,352
Utilities	109,814	119,737	130,557	142,355	155,219	169,246	184,540	201,217	219,400	239,226
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.)	180,000	197,460	216,614	237,625	260,675	285,960	313,698	344,127	377,507	414,126
Office vehicles running expense	180,000	198,120	218,064	240,016	264,177	290,771	320,042	352,260	387,721	426,751
Office expenses (stationery, entertainment, etc.)	225,000	246,825	270,767	297,031	325,843	357,450	392,123	430,159	471,884	517,657
Promotional expense	108,595	129,487	153,486	181,003	212,506	248,517	289,624	318,779	350,869	386,190
Depreciation expense	388,380	388,380	388,380	388,380	388,380	388,380	266,430	697,402	697,402	697,402
Amortization of pre-operating costs	17,866	17,866	17,866	17,866	17,866	-	-	-	-	-
Bad debt expense	108,595	129,487	153,486	181,003	212,506	248,517	289,624	318,779	350,869	386,190
Subtotal	3,918,248	4,284,676	4,689,317	5,136,153	5,629,588	6,156,609	6,636,356	7,696,343	8,387,499	9,146,940
Operating Income	1,640,439	2,569,147	3,664,022	4,948,784	6,451,230	8,219,674	10,374,633	11,042,619	12,254,876	13,592,097
Other income 2										
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	350,000	-	-	
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	106,250	-	-	
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	83,500	-	-	
Earnings Before Interest & Taxes	1,640,439	2,569,147	3,664,022	4,948,784	6,451,230	8,219,674	10,914,383	11,042,619	12,254,876	13,592,097
Subtotal	-	-	-	-	-	-	-	-	-	-
Earnings Before Tax	1,640,439	2,569,147	3,664,022	4,948,784	6,451,230	8,219,674	10,914,383	11,042,619	12,254,876	13,592,097
Tax	271,486	323,718	536,005	904,635	1,377,930	1,996,885	2,940,033	2,984,916	3,409,206	3,877,233
NET PROFIT/(LOSS) AFTER TAX	**1,368,953**	**2,245,428**	**3,128,017**	**4,044,149**	**5,073,300**	**6,222,789**	**7,974,349**	**8,057,703**	**8,845,670**	**9,714,864**

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	500,000	650,541	1,021,987	1,526,489	2,052,231	2,571,296	3,040,337	7,232,717	15,061,155	23,531,426	40,408,438
Accounts receivable	-	3,490,538	4,162,093	4,933,482	5,817,947	6,830,548	7,988,061	9,309,331	10,246,470	11,277,948	9,087,039
Raw Material inventory	493,500	647,681	845,001	1,096,812	1,417,335	1,824,370	2,340,174	2,835,044	3,434,563	4,160,860	-
Finished Goods inventory-100gram(packets)		480,957	566,737	664,916	777,248	905,319	1,051,300	1,217,666	1,339,782	1,474,147	1,621,989
Finished Goods inventory-250gram(packets)		109,933	129,513	151,921	177,657	206,894	240,219	278,324	306,236	336,948	370,740
Finished Goods inventory-500gram(packets)		41,225	48,581	56,999	66,621	77,603	90,120	104,371	114,838	126,355	139,028
Finished Goods inventory-1kg(packets)		41,225	48,581	56,999	66,621	77,603	90,120	104,371	114,838	126,355	139,028
Pre-paid building rent	140,000	154,000	169,400	186,340	204,974	225,471	248,019	272,820	300,102	330,113	-
Total Current Assets	1,145,167	5,630,169	7,008,859	8,694,421	10,605,310	12,748,862	15,124,238	21,397,924	30,970,179	41,427,096	51,766,262
Fixed assets											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	225,300	202,770	180,240	157,710	135,180	112,650	90,120	67,590	45,060	22,530	-
Machinery & equipment	1,400,000	1,190,000	980,000	770,000	560,000	350,000	140,000	2,653,855	2,255,777	1,857,698	1,459,620
Furniture & fixtures	280,000	238,000	196,000	154,000	112,000	70,000	28,000	530,771	451,155	371,540	291,924
Office vehicles	334,000	283,900	233,800	183,700	133,600	83,500	33,400	508,883	432,551	356,218	279,886
Office equipment	425,000	361,250	297,500	233,750	170,000	106,250	42,500	805,635	684,789	563,944	443,099
Security against building	420,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000
Total Fixed Assets	3,084,300	2,695,920	2,307,540	1,919,160	1,530,780	1,142,400	754,020	4,986,734	4,289,332	3,591,931	2,894,529
Intangible assets											
Pre-operation costs	89,328	71,462	53,597	35,731	17,866	-	-	-	-	-	-
Total Intangible Assets	89,328	71,462	53,597	35,731	17,866	-	-	-	-	-	-
TOTAL ASSETS	**4,318,795**	**8,397,551**	**9,369,996**	**10,649,312**	**12,153,956**	**13,891,262**	**15,878,258**	**26,384,658**	**35,259,511**	**45,019,027**	**54,660,791**
Liabilities & Shareholders' Equity											
Current liabilities											
Accounts payable		2,709,804	3,244,011	3,862,914	4,579,285	5,407,879	6,365,775	7,439,019	8,256,169	9,170,014	9,096,915
Other liabilities											
Total Current Liabilities	-	2,709,804	3,244,011	3,862,914	4,579,285	5,407,879	6,365,775	7,439,019	8,256,169	9,170,014	9,096,915
Other liabilities											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
Shareholders' equity											
Paid-up capital	4,318,795	4,318,795	4,318,795	4,318,795	4,318,795	4,318,795	4,318,795	5,777,601	5,777,601	5,777,601	5,777,601
Retained earnings		1,368,953	1,807,191	2,467,604	3,255,877	4,164,588	5,193,689	13,168,038	21,225,741	30,071,411	39,786,275
Total Equity	4,318,795	5,687,747	6,125,985	6,786,398	7,574,671	8,483,383	9,512,483	18,945,639	27,003,342	35,849,012	45,563,876
TOTAL CAPITAL AND LIABILITIES	**4,318,795**	**8,397,551**	**9,369,996**	**10,649,312**	**12,153,956**	**13,891,262**	**15,878,258**	**26,384,658**	**35,259,511**	**45,019,027**	**54,660,791**

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		1,368,953	2,245,428	3,128,017	4,044,149	5,073,300	6,222,789	7,974,349	8,057,703	8,845,670	9,714,864
Add: depreciation expense		388,380	388,380	388,380	388,380	388,380	388,380	266,430	697,402	697,402	697,402
amortization of pre-operating costs		17,866	17,866	17,866	17,866	17,866	-	-	-	-	-
Equipment spare part inventory	(11,667)	(2,403)	(2,898)	(3,495)	(4,214)	(5,082)	(6,129)	(7,392)	(8,914)	(10,750)	62,944
Raw Material Iventory	(493,500)	(154,181)	(197,320)	(251,811)	(320,523)	(407,036)	(515,804)	(494,870)	(599,519)	(726,297)	4,160,860
Finished Goods inventory-100gram(packets)		(480,957)	(85,780)	(98,179)	(112,331)	(128,071)	(145,982)	(166,366)	(122,116)	(134,365)	(147,842)
Finished Goods inventory-250gram(packets)		(109,933)	(19,580)	(22,409)	(25,736)	(29,238)	(33,325)	(38,104)	(27,912)	(30,712)	(33,792)
Finished Goods inventory-500gram(packets)		(41,225)	(7,356)	(8,419)	(9,622)	(10,981)	(12,517)	(14,251)	(10,467)	(11,517)	(12,672)
Finished Goods inventory-1kg(packets)		(41,225)	(7,356)	(8,419)	(9,622)	(10,981)	(12,517)	(14,251)	(10,467)	(11,517)	(12,672)
Pre-paid building rent	(140,000)	(14,000)	(15,400)	(16,940)	(18,634)	(20,497)	(22,547)	(24,802)	(27,282)	(30,010)	330,113
Accounts payable		2,709,804	534,207	618,903	716,371	828,595	957,896	1,073,244	817,150	913,845	(73,100)
Cash provided by operations	(645,167)	150,541	2,178,636	2,972,106	3,781,618	4,683,653	5,662,730	7,232,717	7,828,438	8,470,271	16,877,012
Financing activities											
Issuance of shares	4,318,795	-	-	-	-	-	-	1,458,807	-	-	-
Cash provided by / (used for) financing activities	4,318,795	-	-	-	-	-	-	1,458,807	-	-	-
Investing activities											
Capital expenditure	(3,173,628)	-	-	-	-	-	-	(4,499,144)	-	-	-
Cash (used for) / provided by investing activities	(3,173,628)	-	-	-	-	-	-	(4,499,144)	-	-	-
NET CASH	500,000	150,541	2,178,636	2,972,106	3,781,618	4,683,653	5,662,730	4,192,380	7,828,438	8,470,271	16,877,012

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 32: Operating Cost Assumptions

Description	Details
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation rate	10.1%
Wage growth rate	9.7%
Electricity price growth rate	9.0%
Office equipment price growth rate	9.6%
Office vehicle price growth rate	6.2%

13.2. Revenue Assumptions

Table 33: Revenue Assumptions

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

13.3. Financial Assumptions

Table 34: Financial Assumptions

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

13.4. Debt-Related Assumptions

Table 35: 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%

13.5. Cash Flow Assumption

Table 36: Cash Flow Assumptions

Description	Days
Accounts receivable cycle	45
Accounts payable cycle	60

Small and Medium Enterprises Development Authority

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