
Pre-Feasibility Study

Garlic Powder and Paste Production Unit



Small and Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

www.smeda.org.pk

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
helpdesk@smeda.org.pk

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

May 2019

Table of Contents

1	DISCLAIMER	3
2	EXECUTIVE SUMMARY	4
3	INTRODUCTION TO SMEDA	5
4	PURPOSE OF THE DOCUMENT	5
5	BRIEF DESCRIPTION OF PROJECT & PRODUCT	6
5.1	HEALTH BENEFITS.....	7
5.2	SULFUR-CONTAINING COMPOUNDS IN GARLIC.....	7
5.3	DESCRIPTION.....	7
5.4	HOW TO SELECT AND STORE.....	9
5.5	LOCAL INDUSTRY	10
5.6	PRODUCTION PROCESS FLOW	11
5.7	MANUFACTURING PROCESS:	11
5.8	INSTALLED AND OPERATIONAL CAPACITIES	13
6	CRITICAL FACTORS	13
7	GEOGRAPHICAL POTENTIAL FOR INVESTMENT	14
8	POTENTIAL TARGET CUSTOMERS / MARKETS	14
9	PROJECT COST SUMMARY	14
9.1	PROJECT ECONOMICS	14
	PROJECT FINANCING.....	15
9.2	PROJECT COST	15
9.3	SPACE REQUIREMENT.....	16
9.4	MACHINERY & EQUIPMENT REQUIREMENT	16
9.5	FURNITURE & FIXTURES REQUIREMENT.....	17
9.6	OFFICE EQUIPMENT REQUIREMENT.....	17
9.7	HUMAN RESOURCE REQUIREMENT.....	18
9.8	UTILITIES AND OTHER COSTS.....	18
9.9	REVENUE GENERATION.....	19
10	CONTACT DETAILS	20
10.1	MACHINERY SUPPLIERS.....	20
10.2	RAW MATERIAL SUPPLIERS.....	20
10.3	TECHNICAL EXPERTS / CONSULTANTS.....	20
11	USEFUL WEB LINKS	21
12	ANNEXURES	22
12.1	INCOME STATEMENT	22
12.2	BALANCE SHEET	23
12.3	CASH FLOW STATEMENT.....	24
13	KEY ASSUMPTIONS	25

1 DISCLAIMER

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

For more information on services offered by SMEDA, please contact our website: www.smeda.org.pk

Document Control

Document No.	PREF-NO
Revision	No.
Prepared by	SMEDA-Balochistan
Revision Date	NA
For information	shakoor@smeda.org.pk

2 EXECUTIVE SUMMARY

Garlic Powder and Paste Production Unit is proposed to be located at Quetta, Loralai, Mach, Sibi, Harnai, Duki, Qilla Abdullah, Pishin, Karak, Dera Ismail Khan, Kohat, Attock, Hub, Lahore, Faisalabad, Multan, Gujranwala, others

Products include **Garlic Powder and Garlic Paste**

Capacity; Installed capacity **1,044,000 Kgs** and initial utilization **783,000 Kgs, 75%**

Total Cost Estimates is **Rs. 47,318,640** with fixed investment **Rs. 42,819,765** and working capital **Rs. 4,498,875**.

Given the cost assumptions IRR and payback are **46 %** and **2.79 years** respectively

The most critical considerations or factors for success of the project are:

- Most significant consideration
 - Large quantity of garlic production in the country.
 - Availability of large quantities of three varieties mix.
 - Availability of hard working & low-cost labor.
 - Increasing inland trends towards use of garlic powder and paste.
 - Large and established world markets.
 - Improved technological changes available.
- Equally important factor
 - Emphasizing on excellent services to its customers such as standardized products and timely order fulfillment.
 - New machinery should be purchased in order to increase the efficiency and lower the maintenance cost.
 - Refurbished standardized machinery is also recommended.
 - Adapt to the rapid, social, economic and technological changes.
 - Hiring of well-trained / experienced staff will add in the efficiency of the facility.

3 INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an 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 'sectoral 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.

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 **Garlic Powder and Paste Production Unit** by providing them with a general understanding of the business with the intention of supporting potential investors in crucial 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 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 & PRODUCT

This project envisages production of Garlic powder and Garlic paste which is having a very bright prospect in Household use, Restaurants & Hotels and Export Market.

Even more so, in the restaurant business, where using garlic is essential to season and flavor all kinds of dishes. On that note, the time of workers will be saved themselves from not having to peel hundreds of cloves of garlic each week! And that translates into time that can be used productively in other aspects. In addition, garlic of the best quality, knowing that the company follows the best health standards.

Garlic (*Allium sativum*) is a species in the onion genus, *Allium*. Its close relatives include the onion, shallot, leek, chive, and Chinese onion. Garlic is the second most widely used cultivated allium after onion. It has long been recognized all over the world as a valuable spice for foods and a popular remedy for various ailments and physiological disorders.

Garlic is native to Central Asia and northeastern Iran, and has long been a common seasoning worldwide, with a history of several thousand years of human consumption and use. It was known to ancient Egyptians, and has been used both as a food flavoring and as a traditional medicine. In Ancient Rome, it was "much used for food among the poor". China produces some 80% of the world supply of garlic.

It is grown throughout Pakistan and consumed by most of the people. It is used practically all over the world for flavoring various dishes. In America about 50% of the entire output of fresh garlic is dehydrated and sold to food processors.

In Pakistan, Middle East and other countries, it is already being used in several food preparation especially in dishes, curry powders, curried vegetables, meat preparation, tomato ketchup etc.

The important garlic producing countries in the world are china, Turkey, India, Thailand, Korea, Egypt, Pakistan etc.

The proposed business has higher return on investment and a steady growth of business is expected with the processors having some prior experience or education in the related field of business. This pre-feasibility encompasses essential information regarding various aspects of starting the production of Garlic processed i.e. garlic powder and paste.

Garlic is considered as a rich source of carbohydrates, protein, phosphorous. Ascorbic acid content was reported to be very high in green garlic. Nutritive composition of fresh peeled garlic and dehydrated garlic powder is reported.

Particular	Fresh peeled garlic cloves	Dehydrated garlic powder
Moisture%	62.8	5.2
Protien%	6.3	17.5
Fat%	0.1	0.6
mineral matter%	1	3.2
Fibre%	0.8	1.9
Carbohydrates%	29	71.4
Calcium%	0.03	0.1
Phosphours%	0.31	0.42
Potassium%	0	1.1
Iron%	0.001	0.004
Niacin%	0	0.7
Sodium%	0	0.01
Vitamin A.I.U.	0	175
Nicotinic acid(mg/100g)	0.4	0
Vitamin C (mg/100g)	13	12
Vitamin B(mg/100g)	0	0.68
Vitamin B2 (mg/100g)	0	0.08

5.1 Health Benefits

While garlic ranks as an excellent source of manganese and vitamin B6, a very good source of vitamin C and copper, and a good source of selenium, phosphorus, vitamin B1, and calcium, it is the sulfur compounds in garlic that serve as its spotlight nutrients in terms of overall health benefits. The sulfur-containing compounds in this allium vegetable have been shown to provide us with health advantages in a wide variety of body systems, including: our cardiovascular system, immune system, inflammatory system, digestive system, endocrine system, and detoxification system.

5.2 Sulfur-Containing Compounds in Garlic

The six categories of sulfur-containing compounds will give you an initial look at the remarkable complexity of this allium vegetable. In terms of potential health benefits, each of these compounds has been studied fairly extensive. However, it is also worth noting here that the majority of studies have not focused on the presence of compounds in fresh garlic consumed as a food, but rather on garlic supplements, whether they be oils, tablets, powders, or other types of extracts.

5.3 Description

Garlic—together with onions—are among the best known of all "allium vegetables." Both of these plants (garlic and onions) belong to the same genus of

plants called the *Allium* genus. "Allium" is actually the Latin word for garlic! Other commonly enjoyed foods that belong to this *Allium* genus are leeks, chives, scallions, and shallots.

Unlike this genus grouping for garlic which is very straightforward, the food family for garlic can be confusing. The correct placement for garlic is within the very broad amaryllis family (*Amaryllidaceae*) that includes the very popular flower by that same name. The *Allioideae* are a subfamily within the amaryllis family and garlic (*Allium sativum*) is a member of this *Allioideae* subfamily, along with onions, leeks, chives, scallions, and shallots.

Garlic is arranged in a head, called a "bulb," which averages about 2 inches in height and diameter and consists of numerous small separate cloves. Both the cloves and the entire bulb are encased in paper-like sheathes that can be white, off-white, or have a pink/purple hue. Although garlic cloves have a firm texture, they can be easily cut or crushed. The taste of garlic is like no other—it hits the palate with a hot pungency that is shadowed by a very subtle background sweetness.

Most producers of garlic divide its varieties into four types:

- Hardneck
- Softneck
- Black
- Creole

Hardneck garlic, like the name suggests, has a central stalk that is hard and woody. Purple Stripe is a popular variety of hardneck garlic, as are Rocambole and Porcelain. In the case of Purple Stripe and other hardneck varieties, you will typically find a light purplish or rosy tint to small portions of the cloves and skins. Hardneck varieties of garlic typically have more "bite" than softnecked varieties. *Allium sativum* subspecies *ophioscorodon* is usually the subspecies name to refer to hardneck garlics.

Softneck varieties of garlic are the most common types that you will find in the grocery store. They typically have less "bite" than hardneck varieties. Formidable, Western Rose, Artichoke, and Silverskin are popular varieties of softneck garlic. *Allium sativum* subspecies *sativum* is usually the subspecies name to refer to softneck garlics. Softneck varieties of garlic are also typically the types that you find braided in the supermarket.

Agricultural information on garlic that treats "Creole garlic" as a type of softneck. However, there is also some genetic evidence to suggest that Creole garlic be treated as its own type of garlic, separate from softneck. Creole garlic is usually

recognizable by from the rosy/purplish color of the entire garlic bulb (and not just intermittent rosy hues as can be present in hardneck varieties). You are less likely to come across this variety of garlic in the grocery store. Worldwide, however, well-known varieties of Creole garlic include Burgundy, Ajo Rojo, Cuban Purple, and Creole Red.

Heat treatment, high humidity, and aging are typically the processes used to create black garlic. Particularly when the aging process is allowed to continue not only over the course of several days but over the course of several weeks (or even longer), the color of the garlic cloves can turn into a rich black. This variety of garlic has a special history of popularity in parts of Korean, Japan, and Thailand. Although you will often hear the term "fermented garlic" being used to describe black garlic, the use of this term is a matter of some controversy since microorganisms (like bacteria) are not typically added during the garlic aging process to help produce black garlic. (In the world of food, "fermentation" is usually understood to involve the use of bacteria or yeasts in development of a "fermented food.")

Elephant garlic (*Allium ampeloprasum*) is an unusual type of garlic because it is actually more closely related to leeks (*Allium porrum*) than to garlic (*Allium sativum*). When you see elephant garlic growing, its tall flower stalk and large purplish flower head make it seem like an extremely large version of normal garlic—and thus the name. Unlike leeks, however, elephant garlic does form a bulb, and this bulb usually consists of very large cloves that are few in number. (Elephant garlic bulbs may sometimes have only three to four cloves per bulb.)

5.4 How to Select and Store

We encourage the purchase of certified organically grown foods, and garlic is no exception. Repeated research studies on organic foods as a group show that your likelihood of exposure to contaminants such as pesticides and heavy metals can be greatly reduced through the purchased of certified organic foods, including garlic.

Store fresh garlic in either an uncovered or a loosely covered container in a cool, dark place away from exposure to heat and sunlight. This will help maintain its maximum freshness and help prevent sprouting, which reduces its flavor and causes excess waste. It is not necessary to refrigerate garlic.

Depending upon its age and variety, whole garlic bulbs will keep fresh for about a month if stored properly. Inspect the bulb frequently and remove any cloves that appear to be dried out or moldy. Once you break the head of garlic, it greatly reduces its shelf life to just a few days.

5.5 Local Industry

Pakistani scientists have made a breakthrough by developing the highest-yield garlic variety which is suitable for growing in all provinces of the country.

Keeping in view the present demand and yield gap, garlic variety development programme launched under the vegetable crop research programme at the National Agricultural Research Centre (NARC).

The new garlic variety, 'NARC-G1' is the highest garlic variety among all the existing garlic variants in the country. The quality was found to be superior with 26 tonnes yield per hectare.

It has higher nutrient contents and medicinal value with suitability to pharmaceutical, food processing industry and household level. Moreover, farmers' income will increase due to low expenditure on plant protection and higher yield potential, ultimately reducing the import bill.

The newly-developed variety of garlic was presented at the variety evaluation committee of agricultural research scientists from all over the country at a meeting of Pakistan Agriculture Research Council to determine the potential of this new variant.

Currently, Pakistan is spending precious foreign exchange on the import of garlic due to high demand and low yield potential of existing varieties. Latest estimates showed that the country is importing 34,375 tonnes of garlic from China, India and Chile worth Rs66 million¹.

The total indigenous production of garlic in the country stands at 70,925 tonnes from an area of 7,882 hectares with an average yield of 8.99 tonnes per hectare. Khyber-Pakhtunkhwa is the major garlic-producing province with 32,205 tonnes, followed by Punjab (24,143 tonnes), Balochistan (7,880 tonnes) and Sindh (6,557 tonnes)².

Following key parameters must be addressed as per pre-feasibility study under preparation

- **Technology:** This proposed unit with modern processing and production machines including Garlic splitter, Garlic peeler, Complete compressor for peeler, Disinfection washing bath, Cooling coil for disinfection with hydro cooling, Drying line with turbines for peeled garlic cloves, etc.
- **Location:** The unit would be located in or near an area where the raw material is available easily like be located at Quetta, Loralai, Mach, Sibi, Harnai, Qilla

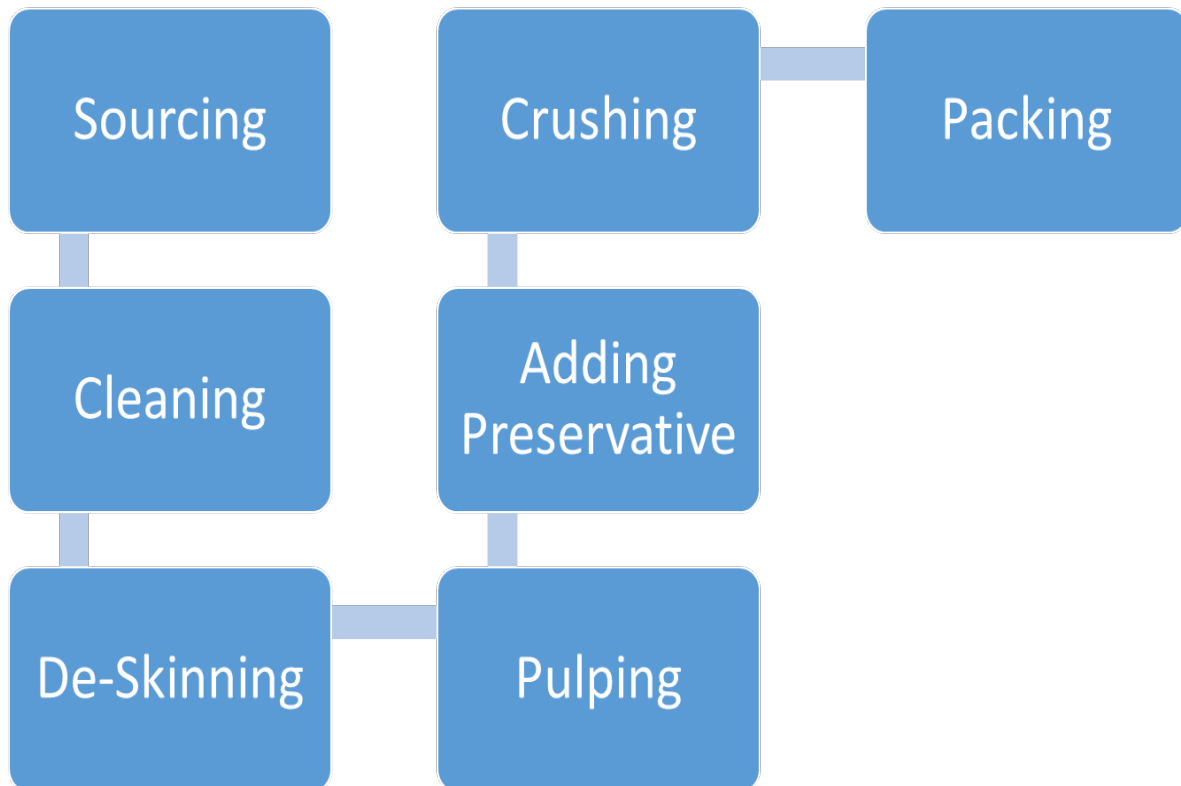
¹ Pakistan Agriculture Research Council

² Pakistan Agriculture Research Council

Abdullah, Pishin, Karak, Dear Ismail Khan, Kohat, Attock, Hub, Lahore, Faisalabad, Multan, Gujranwala, and Karachi or any other site where raw material can be transported easily.

- **Product:** The unit would produce Garlic Paste and Garlic Powder for commercial and residential uses.
- **Target Market:** In addition to local markets in Karachi, Lahore, Rawalpindi, Quetta, Peshawar, and Islamabad an enormous export market for the Pakistani Garlic Paste and Garlic Powder exists in Middle East, India, Europe and China etc.
- **Employment Generation:** The proposed project will provide direct employment to 12 people. Financial analysis shows the unit shall be profitable from the very first year of operation.

5.6 Production Process Flow



5.7 Manufacturing Process: Preparing and Processing Garlic

- Procure the garlic from the farm.
- Wash them with water to clean up any foreign material
- Remove the skin of garlic by skin peeling machine
- Put the product in the mill/crusher machine or drying machine
- Put the output of the mill machine to pulper machine to further getting the fine paste.
- Put the output in the stainless steel tank for mixing the preservative.
- Transfer the product to the pouch packing machine for packing in a customized denomination.

Varieties of garlic bulbs can be obtained from the local market.

Selection:

The garlic bulbs should be sorted and selected for the following characteristics like uniform shape and size, full matured with no greenness without sprouts and firm texture. The bulbs should be cleaned to remove dust/earth, chaff, dry stalk and any foreign materials.

Separation:

The clean bulbs are separated into cloves and winnowed to remove dust and dirt. The cloves graded for their size. The peels or skin of the garlic is filtered through one compartment, while the peeled garlic cloves leave through another compartment.

Peeling:

The outer skin of the cloves are to be removed off by peeler. Whole cloves were used for all the drying operations except freeze-drying.

Dry centrifugation peeled garlic process

It is called this because the machines used to peel garlic simulate the operation of a large washing machine.

The main difference is that this machine does it entirely dry, spinning hundreds of rotations per minute, which manages to detach the fragile outer layers of the garlic.

Wet centrifugation peeled garlic process

This process includes water in the centrifugation, which allows the peels or skin of the garlic to detach more easily.

In this type of machine, the garlic is placed in a space where the centrifugation is carried out and water is received from an upper section.

The difference is that in this type of process, the water is drained through a lower compartment, which carries the husks and residues of the garlic with it.

All of the garlic cloves remain in the upper part, waiting to be released through a top hatch once the process is finished.

This method, is equally useful and effective, while its difference lies basically in the use of compressed air on small amounts of garlic cloves.

The machine works in such a way that it receives a portion of garlic and instantly releases compressed air, instantly breaking the peels or skin off of the garlic.

These are expelled through a mesh and are released below, where a garbage container awaits them. This occurs while the garlic cloves follow a linear path after being cleaned, on the same upper mesh.

5.8 Installed And Operational Capacities

The total installed capacity of the project is 1,044,000 Kgs of Garlic Paste and Powder along with assumed operational capacity of 75% during the first year of operations i.e. 783,000 Kgs of Garlic Paste and Powder. A gradual increase of 3% in production capacity per annum.

6 CRITICAL FACTORS

Garlic Paste and Powder have a wide range of application, not only in Household sector but also in the Hoteling Sector. Certain critical factors involved during the production process of Garlic Paste and Garlic Powder are:

- Identification of small scale, low cost Garlic processing machines/technology for setting up of rural enterprises.
- Arrangement of raw material (Garlic)
- Testing of Garlic processing machines available
- Training of entrepreneurs in Garlic processing for value addition to be deputed
- Problems observed during the operation of Garlic processing machines, if any.
- Communicating the problem for improvement.
- Standardization of the machines for commercial use by the rural entrepreneurs.
- Identification of manufacturer for commercial production of the machine.

- Availability of skilled labor.
- Higher return on investment and a steady growth of business is closely associated with regular training and capacity building of the entrepreneur and employees.
- Prior experience and related / education in the related field of business.

7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

It is suitable to establish the production unit Quetta, Swat, Hub, Khuzdar, Loralai Bostan, Peshawar, Lahore and Karachi. However such a unit could be established in other parts of the country provided the main conditions are fulfilled such as Availability of Garlic Bulb and man power availability, accessibility to markets, and reasonable demand & usage of Garlic Powder and Garlic Paste.

8 POTENTIAL TARGET CUSTOMERS / MARKETS

Due to demand of garlic paste and garlic powder there exist a vast market required. Garlic paste and garlic powder was born from a real market demand. The garlic paste and garlic powder has good market potential. If the product is manufactured and packed in small quantities such as 50 gms and 100 gms packets. The market is widespread especially in rural areas.

Especially in an urban area, people are looking for instant food and ginger paste make it happen all household consume this product. Apart from domestic use garlic paste and powder is used in hotels, restaurants are a major consumer.

The local consumer is the main customer of this business; therefore, it has huge market through Pakistan.

9 PROJECT COST SUMMARY

9.1 Project Economics

All the figures in this financial model have been calculated for estimated sales of Rs. 258.39 million in the year one. The capacity utilization during year one is worked out at 75% with 3% increase in subsequent years up to the maximum capacity utilization of 95%.

The following table shows internal rate of return, payback period and net present value of the proposed venture.

Table 1: Project Economics

Description	Details
Internal Rate of Return (IRR)	46%
Payback Period (yrs.)	2.79
Net Present Value (Rs.)	112,843,123

Project Financing

Following table provides details of the equity required and variables related to bank loan;

Table 2: Project Financing

Description	Details
Total Equity (50%)	Rs. 23,659,320
Bank Loan (50%)	Rs. 23,659,320
Markup to the Borrower (%age / annum)	14%
Tenure of the Loan (Years)	5 Years

9.2 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business.

Table 3: Project Cost

Description	Amount Rs.
Capital Cost	
Land	4,400,000
Building / Infrastructure	9,639,387
Plant and Machinery	27,342,503
Furniture & Fixture	267,500
Office Equipment	452,500
Pre-operating Cost	717,876
Total Capital Cost	42,819,765

Working Capital	
Equipment Spare Parts Inventory	897,188
Raw Material Inventory	1,734,563
Up-front Insurance Payments	1,367,125
Cash	500,000
Total Working Capital	4,498,875
Total Project Cost	47,318,640

9.3 Space Requirement

The space requirement for the proposed **Garlic Paste and Garlic Powder production Unit** is estimated considering various facilities including management office, production hall, storage, open space, etc. Details of space requirement and cost related to land & building is given below;

Table 4: Space Requirement

Description	Estimated Area (Sqft)	Unit Cost (Rs.)	Total Cost (Rs.)
Management Office	400	1,450	580,000
Processing Area	5,000	892	4,459,387
Raw Material Shed	4,000	500	2,000,000
Laboratory	200	1,000	200,000
Finished Goods Store	2,000	800	1,600,000
Drive way / Pavement	20,000	30	600,000
Grounds	10,000	20	200,000
Total	41,600		9,639,387

9.4 Machinery & Equipment Requirement

Plant, machinery and equipment for the proposed project are stated below.

Table 5: Machinery & Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Garlic splitter 450 Kg/hour	1	2,571,250	2,571,250
Garlic peeler 200 Kg/hour	1	5,652,500	5,652,500
Complete compressor for peeler	1	4,079,320	4,079,320
Disinfection washing bath 450L	1	2,944,740	2,944,740
Cooling coil for disinfection with hydro cooling	1	391,000	391,000
Drying line with turbines for peeled garlic cloves	1	3,153,500	3,153,500
Transformer	1	1,200,000	1,200,000
Generator	1	2,000,000	2,000,000
Tube Well	1	800,000	800,000
Installation	1	150,000	150,000
Total machinery cost			22,942,310
GST 17%		0.17	
Total			26,842,503
Transportation charges	1	500,000	500,000
Total			27,342,503

9.5 Furniture & Fixtures Requirement

Details of the furniture and fixture required for the project are given below;

Table 6: Furniture & Fixture

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Tables	2	6,000	12,000
Executive Chairs	2	5,000	10,000
Visitors Chairs	7	3,500	24,500
Carpeting	400	300	120,000
Air Conditioners (2 ton Split)	1	90,000	90,000
Total			267,500

9.6 Office Equipment Requirement

Following office equipment will be required for **Garlic Paste and Garlic Powder production Unit**;

Table 7: Office Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Laptop	1	125,000	125,000
Desktop Computer with UPS	1	80,000	80,000
Printer	1	20,000	20,000
Fax Machine	1	20,000	20,000
Telephone Sets	3	2,500	7,500
Photo Copier	1	200,000	200,000
Total			452,500

9.7 Human Resource Requirement

In order to run operations of **Garlic Paste and Garlic Powder production Unit** smoothly, details of human resources required along with number of employees and monthly salary are recommended as under;

Table 8: Human Resource Requirement

Description	No. of Employees	Monthly Salary per person (Rs.)
CEO/ Manager	1	50,000
Supervisor	1	35,000
Accountant cum Receptionist	1	22,000
Salesman	2	22,000
Skilled Worker/ Machine Operator	2	22,000
Loading Worker	2	18,000
Security Guard	2	18,000
Peon	1	18,000
Total	12	285,000

9.8 Utilities and other costs

An essential cost to be borne by the project is the cost of electricity and gas. The electricity expenses are estimated to be around Rs. 1,896,873 / year. Furthermore, promotional expense being essential for marketing of **Garlic Paste and Garlic**

Powder production Unit is estimated as 1% of administrative / Cost of Sales expenses.

9.9 Revenue Generation

Based on the capacity utilization of 75% for Garlic Paste and Garlic Powder Sales revenue during the first year of operations is estimated as under;

Table 9: Revenue Generation – Year 1

Description	No. of Kgs Produced (No.)	Finished Goods Inventory (No.)	Units available for Sale (No.)	Sale Price / unit (Rs.)	Sales Revenue (Rs.)
Garlic Paste	469,800	39,150	430,650	300	129,195,000
Garlic Powder	313,200	26,100	287,100	450	129,195,000
Total	783,000	65,250	717,750		258,390,000

10 CONTACT DETAILS

In order to facilitate potential investors, contact details of private sector Service Providers relevant to the proposed project be given.

10.1 Machinery Suppliers

Name of Supplier	Address	Phone	Fax	E-mail	Website
Turchmir Engineering (services) Comapny	Nawab Chowk, Bagrian Road, Town ship, Lahore	042-35113377	042-35123388	info@turchmir.pk	www.turchmir.pk

10.2 Raw Material Suppliers

Name of Supplier	Address	Phone	Fax	E-mail	Website
Khwaja Spices	Golimar, Sukkur	0300-2364558			
Watan Dealer	People Colony Attock	057-2603333			
Shahmir Marketing	Nazimabad, Karachi	021-4915500			

10.3 Technical Experts / Consultants

Name of Expert/ Organization	Address	Phone	Fax	E-mail	Website
Pakistan Agricultural Research Council	G-5, Islamabad	051-90762000	051-9255034		www.parc.gov.pk

11 USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries & Production	www.moip.gov.pk
Ministry of Education, Training & Standards in Higher Education	http://moptt.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.khyberpakhtunkhwa.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Government of Azad Jamu Kashmir	www.ajk.gov.pk
Trade Development Authority of Pakistan (TDAP)	www.tdap.gov.pk
Security Commission of Pakistan (SECP)	www.secp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
State Bank of Pakistan (SBP)	www.sbp.org.pk
Punjab Small Industries Corporation	www.psic.gop.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Pakistan Horticulture Development and Export Company (PHDEC)	www.phdec.org.pk
Punjab Vocational Training Council (PVTc)	www.pvtc.gop.pk
Technical Education and Vocational Training Authority (TEVTA)	www.tevta.org
Pakistan Readymade Garment Technical Training Institute	www.prgmea.org/prgtti/
Pakistan Council of Scientific and Industrial Research (PCSIR).	http://www.pcsir.gov.pk
Punjab Industrial Estates (PIE)	www.pie.com.pk
Faisalabad Industrial Estate Development and Management Company (FIEDMC)	www.fiedmc.com.pk

12 ANNEXURES

12.1 Income Statement

Statement Summaries										SMEDA
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	Rs. in actuals									
Revenue	258,390,000	321,437,160	367,223,868	418,953,546	477,356,921	543,251,435	617,551,283	694,564,867	765,364,097	841,900,507
Cost of goods sold	222,185,623	277,095,861	316,357,674	360,700,880	410,749,144	467,200,045	530,833,631	596,837,731	657,655,929	723,408,538
Gross Profit	36,204,377	44,341,299	50,866,194	58,252,666	66,607,777	76,051,390	86,717,652	97,727,136	107,708,169	118,491,969
<i>General administration & selling expenses</i>										
Administration expense	2,244,000	4,200,699	4,609,686	5,058,491	5,550,993	6,091,445	6,684,517	7,335,331	8,049,509	8,833,221
Rental expense	-	-	-	-	-	-	-	-	-	-
Utilities expense	1,896,873	2,086,560	2,295,216	2,524,738	2,777,212	3,054,933	3,360,426	3,696,469	4,066,116	4,472,728
Travelling & Comm. expense (phone, fax, etc.)	20,400	38,188	41,906	45,986	50,464	55,377	60,768	66,685	73,177	80,302
Office vehicles running expense	-	-	-	-	-	-	-	-	-	-
Office expenses (stationary, etc.)	20,400	38,188	41,906	45,986	50,464	55,377	60,768	66,685	73,177	80,302
Promotional expense	2,583,900	3,214,372	3,672,239	4,189,535	4,773,569	5,432,514	6,175,513	6,945,649	7,653,641	8,419,005
Insurance expense	1,367,125	1,230,413	1,093,700	956,988	820,275	683,563	546,850	410,138	273,425	136,713
Professional fees (legal, audit, etc.)	1,291,950	1,607,186	1,836,119	2,094,768	2,386,785	2,716,257	3,087,756	3,472,824	3,826,820	4,209,503
Depreciation expense	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220
Amortization expense	143,575	143,575	143,575	143,575	143,575	-	-	-	-	-
Property tax expense	-	-	-	-	-	-	-	-	-	-
Miscellaneous expense	-	-	-	-	-	-	-	-	-	-
Subtotal	12,856,443	15,847,401	17,022,567	18,348,287	19,841,556	21,377,686	23,264,819	25,282,000	27,304,086	29,519,992
Operating Income	23,347,934	28,493,898	33,843,627	39,904,378	46,766,222	54,673,705	63,452,833	72,445,136	80,404,083	88,971,977
Other income	-	-	-	-	-	-	-	-	-	-
Gain / (loss) on sale of assets	-	-	-	-	-	-	-	-	-	-
Earnings Before Interest & Taxes	23,347,934	28,493,898	33,843,627	39,904,378	46,766,222	54,673,705	63,452,833	72,445,136	80,404,083	88,971,977
Interest expense	2,998,171	2,323,646	1,777,890	1,150,630	429,694	-	-	-	-	-
Earnings Before Tax	20,349,763	26,170,252	32,065,737	38,753,748	46,336,527	54,673,705	63,452,833	72,445,136	80,404,083	88,971,977
Tax	6,511,924	8,374,481	10,261,036	12,401,199	14,827,689	17,495,586	20,304,907	23,182,443	25,729,306	28,471,033
NET PROFIT/(LOSS) AFTER TAX	13,837,839	17,795,772	21,804,701	26,352,549	31,508,839	37,178,119	43,147,926	49,262,692	54,674,776	60,500,944
Balance brought forward		13,837,839	23,725,208	34,147,432	45,374,985	57,662,868	71,130,740	85,709,000	101,228,769	116,927,659
Total profit available for appropriation	13,837,839	31,633,611	45,529,909	60,499,980	76,883,824	94,840,987	114,278,667	134,971,692	155,903,546	177,428,603
Dividend	-	7,908,403	11,382,477	15,124,995	19,220,956	23,710,247	28,569,667	33,742,923	38,975,886	44,357,151
Balance carried forward	13,837,839	23,725,208	34,147,432	45,374,985	57,662,868	71,130,740	85,709,000	101,228,769	116,927,659	133,071,453

12.2 Balance Sheet

Statement Summaries											SMEDA
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Rs. in actuals Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	500,000	573,608	9,383,681	15,297,418	21,452,859	27,336,792	38,216,163	49,479,837	61,247,525	72,917,218	104,019,612
Accounts receivable	-	13,450,438	15,091,392	17,924,054	20,462,152	23,328,629	26,563,779	30,212,674	34,150,968	37,998,151	41,832,914
Finished goods inventory	-	20,198,693	23,165,570	26,444,759	30,148,133	34,327,738	39,041,786	44,355,371	49,823,888	54,804,661	60,284,045
Equipment spare part inventory	897,188	1,171,906	1,405,779	1,683,997	2,014,689	2,407,437	2,873,534	3,393,481	3,926,359	4,534,944	-
Raw material inventory	1,734,563	2,373,575	2,982,844	3,743,331	4,691,678	5,873,251	7,344,181	9,086,065	11,013,461	13,326,288	-
Pre-paid annual land lease	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Pre-paid insurance	1,367,125	1,230,413	1,093,700	956,988	820,275	683,563	546,850	410,138	273,425	136,713	-
Total Current Assets	4,498,875	38,998,634	53,122,966	66,050,546	79,589,786	93,957,409	114,586,294	136,937,565	160,435,626	183,717,975	206,136,571
<i>Fixed assets</i>											
Land	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000
Building/Infrastructure	9,639,387	9,157,417	8,675,448	8,193,479	7,711,509	7,229,540	6,747,571	6,265,601	5,783,632	5,301,663	4,819,693
Machinery & equipment	27,342,503	24,608,252	21,874,002	19,139,752	16,405,502	13,671,251	10,937,001	8,202,751	5,468,501	2,734,250	-
Furniture & fixtures	267,500	240,750	214,000	187,250	160,500	133,750	107,000	80,250	53,500	26,750	-
Office vehicles	-	-	-	-	-	-	-	-	-	-	-
Office equipment	452,500	407,250	362,000	316,750	271,500	226,250	181,000	135,750	90,500	45,250	-
Total Fixed Assets	42,101,889	38,813,669	35,525,450	32,237,230	28,949,010	25,660,791	22,372,571	19,084,352	15,796,132	12,507,912	9,219,693
<i>Intangible assets</i>											
Pre-operation costs	717,876	574,301	430,725	287,150	143,575	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	717,876	574,301	430,725	287,150	143,575	-	-	-	-	-	-
TOTAL ASSETS	47,318,640	78,386,603	89,079,141	98,574,926	108,682,371	119,618,200	136,958,865	156,021,917	176,231,758	196,225,887	215,356,264
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	18,284,320	22,743,890	26,017,607	29,724,914	33,921,212	38,668,965	44,028,716	49,593,749	54,763,948	58,625,492
Export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-	18,284,320	22,743,890	26,017,607	29,724,914	33,921,212	38,668,965	44,028,716	49,593,749	54,763,948	58,625,492
<i>Other liabilities</i>											
Lease payable	-	-	-	-	-	-	-	-	-	-	-
Deferred tax	-	4,374,800	4,374,800	4,374,800	4,374,800	4,374,800	3,499,840	2,624,880	1,749,920	874,960	(0)
Long term debt	23,659,320	18,230,324	14,575,923	10,375,767	5,548,352	-	-	-	-	-	-
Total Long Term Liabilities	23,659,320	22,605,124	18,950,724	14,750,568	9,923,152	4,374,800	3,499,840	2,624,880	1,749,920	874,960	(0)
<i>Shareholders' equity</i>											
Paid-up capital	23,659,320	23,659,320	23,659,320	23,659,320	23,659,320	23,659,320	23,659,320	23,659,320	23,659,320	23,659,320	23,659,320
Retained earnings	-	13,837,839	23,725,208	34,147,432	45,374,985	57,662,868	71,130,740	85,709,000	101,228,769	116,927,659	133,071,453
Total Equity	23,659,320	37,497,159	47,384,528	57,806,751	69,034,305	81,322,188	94,790,060	109,368,320	124,888,089	140,586,979	156,730,772
TOTAL CAPITAL AND LIABILITY	47,318,640	78,386,603	89,079,141	98,574,926	108,682,371	119,618,200	136,958,865	156,021,917	176,231,758	196,225,887	215,356,264
<i>Note: Total assets value will differ from project cost due to first installment of leases paid at the start of year 0</i>											

12.3 Cash Flow Statement

Statement Summaries											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
	Rs. in actuals										
<i>Operating activities</i>											
Net profit	-	13,837,839	17,795,772	21,804,701	26,352,549	31,508,839	37,178,119	43,147,926	49,262,692	54,674,776	60,500,944
Add: depreciation expense	-	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220	3,288,220
amortization expense	-	143,575	143,575	143,575	143,575	143,575	-	-	-	-	-
Deferred income tax	-	4,374,800	-	-	-	-	(874,960)	(874,960)	(874,960)	(874,960)	(874,960)
Accounts receivable	-	(13,450,438)	(1,640,953)	(2,832,662)	(2,538,098)	(2,866,477)	(3,235,151)	(3,648,894)	(3,938,295)	(3,847,183)	(3,834,763)
Finished good inventory	-	(20,198,693)	(2,966,877)	(3,279,189)	(3,703,374)	(4,179,605)	(4,714,048)	(5,313,584)	(5,468,517)	(4,980,773)	(5,479,384)
Equipment inventory	(897,188)	(274,719)	(233,873)	(278,218)	(330,692)	(392,748)	(466,097)	(519,947)	(532,878)	(608,586)	4,534,944
Raw material inventory	(1,734,563)	(639,013)	(609,269)	(760,487)	(948,348)	(1,181,573)	(1,470,930)	(1,741,884)	(1,927,396)	(2,312,827)	13,326,288
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Advance insurance premium	(1,367,125)	136,713	136,713	136,713	136,713	136,713	136,713	136,713	136,713	136,713	136,713
Accounts payable	-	18,284,320	4,459,570	3,273,717	3,707,307	4,196,298	4,747,753	5,359,752	5,565,032	5,170,200	3,861,544
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(3,998,875)	5,502,604	20,372,876	21,496,369	26,107,852	30,653,241	34,589,618	39,833,341	45,510,611	50,645,580	75,459,545
<i>Financing activities</i>											
Change in long term debt	23,659,320	(5,428,996)	(3,654,400)	(4,200,156)	(4,827,416)	(5,548,352)	-	-	-	-	-
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Change in export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Add: land lease expense	-	-	-	-	-	-	-	-	-	-	-
Land lease payment	-	-	-	-	-	-	-	-	-	-	-
Change in lease financing	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	23,659,320	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financ	47,318,640	(5,428,996)	(3,654,400)	(4,200,156)	(4,827,416)	(5,548,352)	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(42,819,765)	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by invest	(42,819,765)	-	-	-	-	-	-	-	-	-	-
NET CASH	500,000	73,608	16,718,476	17,296,213	21,280,436	25,104,889	34,589,618	39,833,341	45,510,611	50,645,580	75,459,545
Cash balance brought forward		500,000	573,608	9,383,681	15,297,418	21,452,859	27,336,792	38,216,163	49,479,837	61,247,525	72,917,218
Cash available for appropriation	500,000	573,608	17,292,084	26,679,895	36,577,854	46,557,748	61,926,410	78,049,503	94,990,448	111,893,105	148,376,763
Dividend	-	-	7,908,403	11,382,477	15,124,995	19,220,956	23,710,247	28,569,667	33,742,923	38,975,886	44,357,151
Cash carried forward	500,000	573,608	9,383,681	15,297,418	21,452,859	27,336,792	38,216,163	49,479,837	61,247,525	72,917,218	104,019,612

13 KEY ASSUMPTIONS

13.1 Operating Assumptions

Description	Details
Days operational per month	22.5
Days operational per year	270

13.2 Production Assumptions

Description	Details
Maximum Capacity Utilization	95%
Total Production of Kgs per day	3,867
Total Production of Kgs per month	87,000
Total Production of Kgs per year (100%)	1,044,000

13.3 Economy Related Assumptions

Description	Details
Electricity price growth rate	10%
Wage growth rate	10%
Sales price growth rate	10%

13.4 Cash Flow Assumptions

Description	Details
Accounts Receivable cycle (in days)	19
Accounts payable cycle (in days)	30