

Pre-Feasibility Study

Pickle Production, Processing, Packaging & Marketing

(SMEDA DOCUMENT)



Small and Medium Enterprise Development Authority Government of Pakistan

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1. PROJECT PROFILE

1.1 Opportunity Rationale

Pickles are considered the permanent part of the food table all over the Sub-Continent and its demand is rising after its production on commercial scale. Sub-continental spices, preserved foods and traditional methods of cooking and food making have always been attractive to the world particularly the western countries.

Traditionally in Pakistan and India home made pickles have been used; however, rise in consumerism and urbanization has affected traditional food and cooking habits where people tend to use food products instantly available in the market. This trend is growing which has resulted in investment growth in the value added whole sale and retail sector by more than 400% during 2005-06 as reported by the economic survey of Pakistan. Growth in population (1.9% as per Economic Survey of Pakistan) is another proponent leveraging the potential in this sector for the investment, further aided by the growth in exports by 104% during 2004-05. A huge local market of more than 150+ million consumers carries enormous potential for the investment in this business.

In comparison with other businesses, pickles have always been in consistent demand due to typical subcontinent spicy add-on food supplement, making meal incomplete without having some spicy taste. This signals substantial potential of this business and market growth largely depends on:

- Population growth and demographics
- Ratio of younger people in the population (according to 1998 census 64% belongs to age group of between 15 to 34)
- Increase in urban life phenomenon; and
- Switching from popular home made pickles to ready to use foods.

Growth in above is the key determinant factor for investing in pickle business.

1.2 Project Brief

The proposed project envisages the setup of Pickle production, processing and marketing business. Pickle is a general term used for fruits or vegetables preserved in vinegar or brine, usually with spices or sugar or both. Pickle producing businesses are engaged in producing pickle in different varieties. Natural fruit and vegetable items are used as raw material for producing various types of pickle i.e. mango, beet, cabbage, cauliflower, cucumber, olive, onion, pepper, and tomato.

Besides its industrial scale production, pickle is also produced at home due to its easy and convenient production process. However, in the purposed business setup, pickle

will be produced in large pots which will then be filled in bottles and after packaging will be sent for sale in the local and remote markets of Pakistan. Dedicated distributors will distribute this product and packing machinery will be used for the packaging purpose. The producer may also explore export opportunities once the business gets stable.

1.3 Market Entry Timing

Pickle is eaten with all types of foods in Pakistan. It is preferred to have pickle while food with less chili is being served on the table. Besides, there are some food recipes in which pickle is compulsory i.e. Achar gosht. Therefore, demand of pickle is almost consistent through out the year and there is, as such, no specific time for the market entry; however, availability of raw material, particularly mango is seasonal and production of pickle would be better started during summer when mango is easily and economically available.

1.4 Proposed Business Legal Status

The legal status of business tends to play an important role in any setup; the proposed Pickle Production, Processing and Packaging Unit is assumed to operate on Sole Proprietorship basis.

1.5 Proposed Capacity and Rationale

The project capacity for a Pickle Business setup is dependent on the demand for spices within the region. The business volume varies from area to area and is very much location specific. The two broad categories of business volume that could be generated according to the income level of the locality are as follows:

In Bottled & Plastic Bags Packaging

1. Low Income Areas – 15 to 20% of sale
2. Medium & High Income Areas – 80 to 85% of sale

In Bulk Packaging (5kg, 10kg or greater quantity Tumblers)

1. Low Income Areas – 70 to 80% of sale
2. Medium Income Areas – 20 to 30% of sale

Considering the above factors and the current consumption levels which is around 5000 tons¹ annually (including exports), it has been assumed that the proposed Pickle production, processing and packaging unit would produce around **100,000 Kilograms**

¹ Source: Internal working based on the data collected from various sources i.e. fruits jams and pickle manufacturers and fruit and vegetable suppliers to the pickle manufacturers

per annum at initial stage, utilizing 60% of capacity and which will be raised with 10% every year.

1.6 Project Cost

Pickle processing and packaging does not need any heavy machinery and equipment. During the discussion with existing pickle producers, Pickle production is time consuming because its process requires sun-light and machinery is used for packaging of Pickle. Total project cost of the Pickle processing and packaging machinery costs around Rs. 1.7 million.

1.7 Recommended Project Parameters

Capacity	Human Resource	Technology/Machinery	Location
100,000 kg / year, 60% utilized initially	8	Local Machinery	Karachi

Financial Summary

Project Cost	IRR	NPV (Rs)	Payback Period	Cost of Capital (WACC)
Rs. 1.7 million	56%	5,957,900	2 Years 8 Months	17.5%

1.8 Proposed Location

Currently pickle is largely produced at homes as production and packaging procedure is economical and simple. Therefore, for the proposed project location would not be critical in terms of availability of labor, utilities or other production requirements. It has been proposed to establish the unit at a place from where target market is close so that the business could save distribution cost.

Proposed Product Mix

The primary sources of revenue generation for the proposed business are factory for processing & packing, marketing and sales/distribution. As production process is simple for making pickle, separate pickles of different vegetables and fruits are generally made which are manually mixed as per the demand of the market. Besides the main ingredients which are often mango, chili, lime, garlic, carrot etc. other spices are the largely similar in all kinds of pickles. The sale price of different types of pickles are also more or less the same as vegetables are pickled during the season when they are available in large quantities and in economical prices.

For the purpose of this study, following four types of pickles are proposed. General ingredients will remain the same; however, their ratio for any specific product will largely depend on the prospective entrepreneur, as every formula used by the existing

players has its own unique taste and the prospective owner would need to develop his own recipe.

Mango Pickle	25%
Chili Pickle	25%
Garlic Pickle	25%
Cucumber Pickle	25%

1.9 Key Success Factor

Main key factory in Pickle production include purchase of raw material at a time when it is available in economical price. Therefore, seasons when vegetables and fruits i.e. mango, carrot, Garlic and Cucumber etc. are easily available at low price would be critical. Besides that, for the product penetration purpose, it would be necessary to select potential consumer market which is generally considered lower or middle class areas with dense population. Following factors should be considered before entering into the pickle business.

1.9.1 Existing Competition

Although a pre-requisite for deciding on the product type, it is necessary to carefully evaluate the existing competition present in the locality and the product mix being offered by them. Factors to consider are:

- Number of existing competitors;
 - Type of products and schemes being offered by them; and
 - Customer perception about the competitors' quality.
- Usually customer volumes are divided where two or more companies are offering same products; therefore there is a need to ensure competitive prices and promotion schemes aligned with customer interest and demand. Too many businesses give fierce competition forcing the profit margins to go down thereby creating sustainability issues.
 - The promotion schemes being offered by the competition in a particular locality need to be carefully evaluated to identify weaknesses and opportunity areas. This is predominantly affected by the level of technology employed by the competition which again is a reflection of the associated customer profiles.
 - Quality issues regarding established business are another opportunity wherein the customers might want to switch to a better quality and even at times willing to pay a higher price if their expectations are adequately met.

1.9.2 Promotional Activities

Promotional activities have a significant influence on revenue generation. Pickle production, packing & marketing business is unique in the sense that this is a common item of our daily life. However, it is very important to focus on promotional activities to ensure a constant stream of business. Mostly the pickle business operators promote their products by announcing different schemes like “buy 2 get 1 free” or giving cutlery items on purchase of the product, etc. Besides, jars used for the packing purposes are also made attractive and re-usable for another purpose after the pickle has been used.

2. SECTOR & INDUSTRY ANALYSIS

2.1 Sector Characteristics and Overview

Pickling of plants is a relatively old method of food preservation. It is estimated that the first pickles were produced over 4,000 years ago using cucumbers. The ancient Egyptians and Greeks both have written about the use of pickles for their nutritive value and healing power. Pickles were a common food during the time of the Roman Empire and they soon spread throughout Europe. In America, pickles have always been popular. The first travelers to America kept pickles in large supply because they were nutritious and did not spoil during the long journeys.

Though there are different Pickling recipes used in the world, they could broadly be grouped into two. In most of the European countries and USA, vinegar is used as bulk making and preserving agent, whereas, in the subcontinent including Pakistan, Brine (or sun-melt salt water) is used. Besides that, spices particularly red chili is also added in sub-continental pickle while it is missing in the Western pickle recipes.

Although pickle has a good business potential in itself as a product, not many large scale manufacturers from the formal sector have taken up this business. Ahmed Foods is considered to be the leader in pickles, sauces, squashes & jams manufacturing. Other Players in this industry who specialize in packaged spices and also producing pickle include Shan Foods, National Foods and Young’s Foods.

The sector can be divided into formal and informal segments as due to convenient manufacturing process, home based small scale setups in thousands have ventured into this as source of additional income. The small scale pickle manufacturers are also selling their product in low quality plastic bottles with different brand names. However, against hundreds of pickle producers from the informal sector, number of large scale pickle producers is limited who are working on the national level. Market share of the rural based units is gradually decreasing, as a number of modern industrial units with larger production capacity have entered the market, with quality branded products.

The Pickles industry is mostly un-documented, which makes it difficult to determine the exact market share. However on a macro scale, there are a number of major players like National Foods, Shan Foods, Young’s Food, Ahmed Foods and Mitchell’s which hold major part of the market (about 25%-30%), however, major share (about 70%-75%) still lies with unbranded market. There are also small players in this business;

however, their operations are restricted to very selective local market of rural and urban areas.

Apart from the major brands, there are a large number of self-owned (home based) independent pickle business set ups. These are largely undocumented and unorganized hence making it difficult to estimate the approximate market size.

The following table gives an idea of the pickle market shares as discussed with industry experts:

Brand	Market Share %
Branded and Packaged	25%-30 %
Loose	70%-75%

There are five major companies that sell branded pickles that claim a growing 20 percent market share. The following table gives an idea of their respective market share based on the information provided by the industry experts.

Brand	Market Share %
National Foods	60% - 70%
Ahmed Foods	10% - 15%
Shan Foods	5% - 10 %
Mitchell's	5% - 10%
Young's Food	2% - 5%
Others	5 %
Total	100%

Based on our discussions with the industry stakeholders, following region-wise consumption pattern can be considered:

Region	%age Share
Punjab	45
Sindh	50
N.W.F.P.& Baluchistan	5

2.2 Sector Characteristics

The demand for branded pickles business has experienced a gradual change over the past years. As mentioned earlier, the advent of technology has opened a new option of

export for many units. However this does not imply that the demand for pickles has been affected by technology because considering the associated costs and the subsequent pricing, the affordability for pickles by a large population of Pakistan becomes questionable.

Branded pickles are facing competition from home made loose pickles which are available with different names and recognitions i.e. Hyderabad Achar, Shikarpuri Achar etc. Branded pickles are at least 30 percent more expensive than un-branded, because of the imposition of 15% General Sales Tax, marketing expenses and other related overheads. The domestic packaged pickles industry has been reportedly growing at an estimated rate of 20%² annually while the export sales reflect a fluctuating trend, increasing in one year [2005] and declining in other [2006].

Product Pricing

Following table presents current market prices of different pickle brands available in the market.

Weight	Retail Price (in Rs.)		
	Ahmed	Shan	National
330 gm	42	45	50
1 Kg	100	100	100
1.8 Kg	180		

2.4 Retailer and Distributor Role

Distributor and retailers are of primary importance in marketing Pickle products, especially for easy availability of alternate brands. That is the reason that, unlike other consumer goods, distribution and retailer margins are relatively high on Pickle Products like other FMCG products. For distributor and retailer, around 20%-30% profit margins are normally given by the manufacturer depending upon the brand penetration, especially by those with small to medium sized operations.

The distribution network desirable for marketing and distribution of Pickle products will be one which provides complete solution from pickup of product from the manufacturer's premises, distribution and ensuring space availability for the product on retail outlets. This kind of distribution solutions can be availed at 30 to 35% of the gross sales.

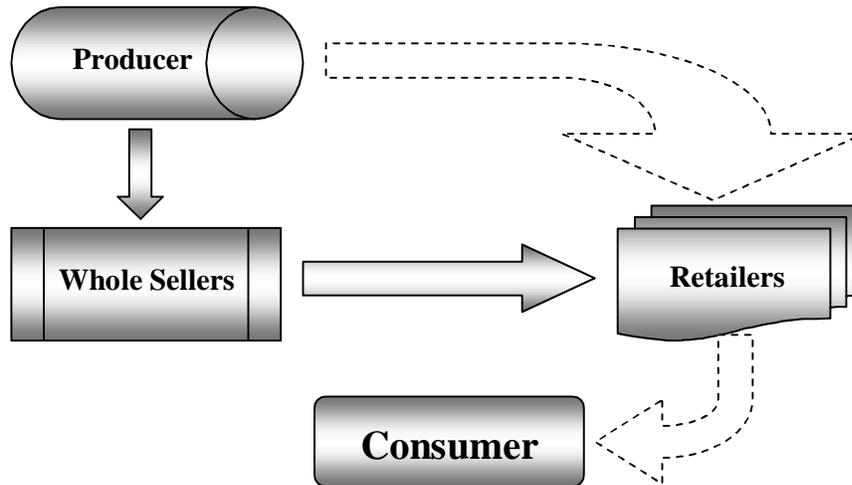
This type of distribution network is proposed for the reason that being a new business setup, it would be difficult for the manufacturer (owner) to handle logistics involved in managing distribution; therefore commissioning such kind of solution will make it possible for the manufacturer to concentrate on product development and broaden

² Source: Based on discussions with the industry experts

market niche. Once the product becomes successful, the distribution cost may gradually be reduced.

Distribution of pickle is carried out following the same model prevalent in the market for the other consumer goods, particularly the food products. Following channels of distribution are common in the market.

Channel of Distribution



2.5 Pickle Quality Issues and Prevention

PROBLEM	CAUSE	PREVENTION
Soft or slippery pickles (if spoilage is evident, do not eat)	A brine is too weak	Maintain salt concentration specified in recipe.
	Vinegar is too weak.	Use vinegar of 5 percent acidity.
	Cucumbers stored at too high a temperature during curing/brining.	Store cucumbers between 70 and 75 °F. This is the optimum temperature for growth of the organisms necessary for fermentation.
	Insufficient amount of brine.	Keep cucumbers immersed in the brine.
	Pickles not processed properly (to destroy microorganisms).	Process in a boiling-water canner for the specified time indicated for the product. As in all canning, a seal is necessary on the jar to prevent other microorganisms from entering.
	Moldy garlic or spices.	Always use fresh spices.
	Blossom ends not removed.	Always remove blossom ends.
Strong, bitter taste	Spices cooked too long in vinegar, or too many spices used.	Follow directions for amount of spices to use and the boiling time.
	Vinegar too strong.	Use vinegar of the proper strength (5-percent acidity).

PROBLEM	CAUSE	PREVENTION
	Dry weather.	No prevention. Bitter taste is usually in the peeling.
	Using salt substitutes.	Potassium chloride ingredient in these is naturally bitter.
Hollow pickles	Fruit / Vegetable is too large for brining.	Use smaller cucumbers for brining.
	Improper curing.	Keep brine proper strength and the product well-covered. Cure until fermentation is complete.
	Long lapse of time between gathering and brining.	Pickling process should be started within 24 hours after gathering.
	Faulty growth of fruit/vegetable.	None. During washing, hollow cucumbers usually float. Remove and use for relish.
Shriveled pickles	Placing fruit/vegetable in too-strong brine, too heavy syrup or too strong vinegar.	Follow a reliable recipe. Use amounts of salt and sugar called for in recipe, and vinegar that is 5-percent acidity.
	Long lapse of time between gathering and brining.	Brine within 24 hours after gathering.
	Over-cooking or over-processing.	Follow a reliable recipe exactly.
	Dry weather.	No prevention.
Scum on brine surfaces while curing cucumbers	Wild yeasts, molds and bacteria that feed on the acid, thus reducing the concentration if allowed to accumulate.	Remove scum as often as needed.
Dark or discolored pickles (if brass, copper or zinc utensils were used do not use the pickles)	Minerals in hard water.	Use soft water.
	Ground spices used.	Use whole spices.
	Spices left in pickles.	Place spices loosely in cheesecloth bag so they can be removed before canning.
	Brass, iron, copper or zinc utensils used.	Use un-chipped enamelware, glass, stainless steel or stoneware utensils.
	Iodized salt used.	Use canning or pickling salt.
Spotted, dull or faded color.	Cucumbers not well cured (brined).	Use brine of proper concentration. Complete fermentation process.

PROBLEM	CAUSE	PREVENTION
	Excessive exposure to light.	Store in a dark, dry, cool place.
	Fruit/vegetable of poor quality.	Work with good-quality produce.
White sediment in crock or jar.	Bacteria cause this during fermentation.	None.
	Salt contains an anti-caking agent.	Use canning or pickling salt.

3. MARKET INFORMATION

3.1 Market Potential

On average total demand of the pickle products in Karachi is around 500,000 kilograms per month³ whereas, around 10 to 15% of the total production is exported, which indicates positive trend of this industry. In 2005-2006, around 643,018 Kilogram pickle was exported. Main export markets include USA, UK and Middle East Countries.

3.1.2 Product Characteristics

Pickle products are available in the market with different composition and in different sizes. Following table presents different types of pickle introduced by two market leaders of the sector.

Mitchell's	Ahmed Foods
➤ Mango Pickle	➤ Mix Pickle
➤ Mango Kasondi	➤ Mango Pickle
➤ Mixed Pickle	➤ Chilli
➤ Chilli and Lime Pickle	➤ Kasondi
➤ Lime Pickle	➤ Garlic
➤ Garlic Pickle	➤ Hyderabad
➤ Mango Chutney	➤ Mango Masala
➤ Tomato Kasondi	➤ Mix Lemon Masala
➤ Fruit Vinegar	➤ Chilli in Vinegar
	➤ Vegetable in Vinegar

3.2 Export of Pickle⁴

³ Website of Mitchell's Fruit Farms and internal research

⁴ Export Promotion Bureau

The Pakistani Pickle products are famous outside the country and its export doubled, from 476,981 Kg to 973,857 Kg during last year 2004-05, but decreased during the the current year [2005-06] from 973,857 Kg to 643,018 Kg. However, this still represents an improvement over the volume achieved in 2003-04, as presented in the table below. The industry has a potential for generating foreign reserve.

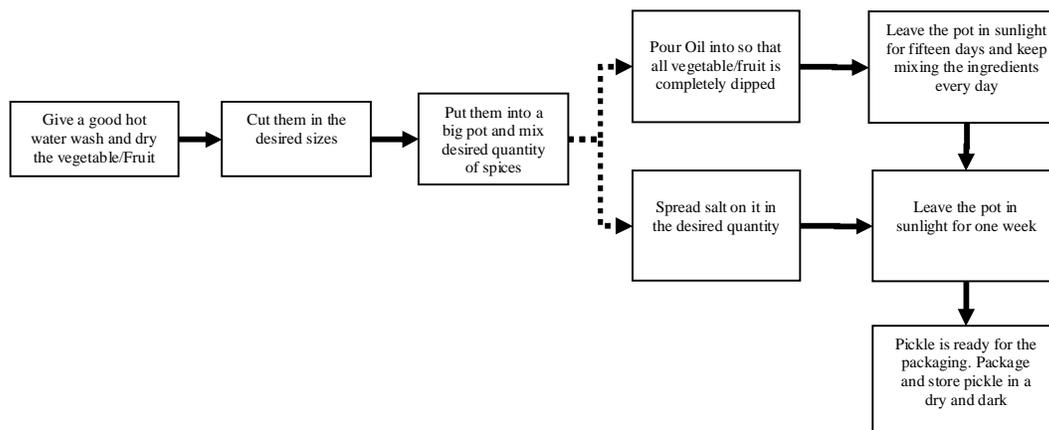
JULY-JUNE 2005-06			JULY-JUNE 2004-05			JULY-JUNE 2003-04		
KG.	000.RS.	000.\$	KG.	000.RS.	000.\$	KG.	000.RS.	000.\$
643,018	48,798	815	973,857	70,971	1,196	476,981	35,905	624

4. PRODUCTION PROCESS

4.1 PROCESS FLOW

There are two basic methods for pickle processing used in Pakistan where local taste is concerned. One is water based process and the other is oil based processing. Pickles available in the Pakistani market are generally based on the water process, whereas, home made pickles are made using oil. Generic production process is carried out following the method given under.

Generic Production Process



Processing days also vary and depend on the recipe used by the manufacturer. Infact, there are hundreds of processes that can be laid down for producing mango pickle, rendering uniqueness of a particular brand in the market. Therefore, processes for the most common pickles produced in Pakistan have been provided in the following paragraphs.

4.2 TEMPERATURES FOR FOOD PRESERVATION

Temperature(s)	Effect
240 to 250°F	Canning temperatures for low acid vegetables, meat, and poultry in a pressure canner.
212°F	Temperature water boils at sea level. Canning temperature for acid fruits, tomatoes, pickles, and jellied products in a boiling-water canner.
180 to 250°F	Canning temperatures are used to destroy most bacteria, yeasts, and molds in acid foods. Time required to kill these decreases as temperatures increase.
140 to 165°F	Warming, temperatures prevent growth, but may allow survival of some microorganisms.
40 to 140°F	DANGER ZONE. Temperatures between 40°F - 140°F allow rapid growth of bacteria, yeast, and molds.
95°F	Maximum storage temperature for canned foods.
50 to 70°F	Best storage temperatures for canned and dried foods.
32°F	Temperature water freezes.
32 to 40°F	Cold temperatures permit slow growth of some bacteria, yeasts, and molds.
0 to 32°F	Freezing temperatures stop growth of microorganisms, but may allow some to survive.
0 to -10°F	Best storage temperatures for frozen foods.

Garlic Pickle (Lehsan Ka Achar)

For 50 KG Batch - Garlic Pickle		
Item	Quantity	Approximately
Garlic	40.00	Kg
Salt	0.75	Kg
Methi Seeds	1.25	Kg
Kalongi	1.25	Kg
Turmeric Powder	0.50	Kg
Rie	1.50	Kg
Vinegar *	9.00	Liter

Heat oil in a large frying pan on medium heat and fry garlic until light brown, about 5 - 8 minutes, Keep aside to cool at room temperature. Dry roast the Kalongi, rie and methi seeds and coarsely grind them. In a large bowl, combine garlic with oil (or vinegar), salt, turmeric powder, Methi and Kalongi. Add lemon juice (optional) and stir with a wooden spoon to mix the ingredients. Store it in an airtight glass or plastic container. Stay fresh up to one month.

Mango Pickle

For 50 KG Batch - Mango Pickle		
Item	Quantity	Approximately
		Approximately
Mango	35.00	Kg
Salt	0.50	Kg
Saunf	1.00	Kg
Methi Seeds	1.00	Kg
Rie	1.00	Kg
Oil *	10.00	Liter

Apply salt to the peeled mangoes and leave them overnight. Next the mangoes would have left some water. Remove mangoes in a plate and do not discard the juices of the mangoes. Slit the mangoes and remove the stone from them. Dry the mangoes in the sun for the whole day. Mix the dry masala spices (i.e. saunf, methi seeds and rie) and when the mangoes dry nicely, fill the mangoes with this spices mix and put them into a

sterilized jar. Pour the reserved juices of mangoes over the mangoes in a jar. Keep the jar in sunlight for 10-15 days and after every 2-3 days toss the pickle up side down.

Lemon Pickle

For 50 KG Batch - Lemon Pickle		
Item	Quantity	Approximately
Lemon	40.00	Kg
Chilli	2.00	Kg
Salt	0.50	Kg
Methi Seeds	0.50	Kg
Saunf	0.50	Kg
Kalongi	1.25	Kg
Rie	1.50	Kg
Oil *	12.00	Liter

Wash and pat dry the lemons and then cut them into halves. Divide the salt into three parts. Place the lemons in a bowl, sprinkle one part of the salt, mix well, cover and leave to marinate over night. Next day drain out all the water released by lemons. Cover them and leave to marinate for one more day. Wash the green chilies and dry them properly. Slit the chilies carefully into half, leaving them still held together at the stalk. Place the green chilies in a separate bowl, sprinkle 2nd part of the salt, mix well, cover and leave to marinate for one day along with the lemons. Next day gently squeeze out all the water released by the lemons and green chilies, taking care not to squeeze the juice from the lemons. Heat mustard oil to smoking point, remove from heat and leave it to cool. In a large bowl combine saunf, kalonji, methi dana, turmeric powder, chili powder and remaining 3rd part of salt, with enough oil just to bind the spices. Stuff the green chilies with half of the spice mixture. Rub the rest of the mixture over lemon pieces to coat them liberally. Place the lemons and chilies in an earthenware jar, Mix thoroughly with hands. Pour in the remaining oil. The oil should cover the lemons and green chilies by about 2.5 cm (1 inch). Cover the jar with a muslin cloth and keep it in an airing place. Stir the contents of the jar for the first two weeks at least once a day. Do this to ensure that all pieces are completely dipped in the oil.

Note: In most of the Pakistani pickles, salt and oil are used as preservatives.

* Vinegar is optional, most of resident like Oil in pickle, instead of Vinegar, so any of them can be used at the time of preparation of Pickle production

4.3 PRODUCTION MIX OFFERED

For the purpose of this pre-feasibility, four types of pickles will be produced in different packaging. Chili, Mango, Lime and Garlic or mix pickle are most commonly used. It has been assumed that the four basic types of pickles will be produced initially in equal quantities and it will be possible to produce mix pickle using the four basic pickles when there is a demand in the market.

All types of pickles will be available in 330 grams, 450 grams, 1 kg, 1.8 kg and 5 kg packs. Pickle from 330grams pack to 1.8 kg pack will be available in Glass bottles, whereas, large quantities will also be available in convenient polythene bags. Pickle in five kilogram will be available in small bucket for loose pickle buyers. In the market, loose pickle is available in 16 kg to 32 kg packs; however, the proposed business setup will not offer these quantities.

4.4 RAW MATERIAL REQUIREMENT

Pickle production would need different types of vegetables and fruits. For the proposed setup, annual requirement of raw material will be as given on the following page:

Pickle Making Material

	<u>%age of total</u>	<u>Qty. (kg)</u>
Chilli	25%	10,750
Mango	25%	10,750
Lime	25%	10,750
Garlic	25%	10,750
Spices		12,300
Salt		1,535
Chilli		1,535
Saunf		614
Methi Seeds		614
Kalongi		614
Rie		614
Oil		12,300

Packaging Material

Following packaging material will be required for the production purposes:

<i>Glass bottles</i>	330 gms	15,000
<i>Glass bottles</i>	450 gms	15,000
<i>Glass bottles</i>	1000 gms	10,000
<i>Glass bottles</i>	1.8 kg	8,000
<i>Plastic buckets</i>	5 kg	5,000
Total Requirement of bottles and buckets		53,000

Polythene bags

Pickle will first be packed in polythene bags which will then be placed in the Glass bottles or bucket. Therefore, polythene bags requirement would be equal to the number of bottles and buckets produced.

Besides above material, cardboard cartons and sticking labels will also be required providing the pickle description, manufacturing and expiry dates.

Vegetables and fruits are available in the Subzi Mandi's, whereas, for the procurement of packaging material following companies may be contacted:

For labels and cartons

Akmal print house
A-70 Manghopir Road
Opp. Kulsoom Bai Valika Hospital
Karachi. PH. 2595301

For Glass Bottle

Ghani Glass Ltd
12- D/3 Chandni Chowk
KDA Scheme # 7 & 8
Karachi.

Bottle Market

Bottle Gali, Light House, Karachi

For Liberate Film

Multipec, Karachi

Mr. Amir Zuberi
Ph: 021-6619394

EN Pack, Karachi

Mr. Naveed
Ph: 021-2639351

4.5 MACHINERY REQUIREMENT

Pickle production would need machinery for the packaging purpose only. Machinery required for the packaging of pickle is available both locally and imported. Local

machinery reportedly gives good quality output and after sales service is easily available. Following machinery will be required for Pickle packaging:

S. No.	Machine	Required No. of Units	Total Cost (in Rupees)	Local / Imported
1	Packaging Machine	1	350,000	Local
2	Gas Burner with Other Accessories	2	50,000	Local
3	Support Structure		100,000	Local
Total			500,000	

There are many local suppliers of packaging machinery working at Karachi and other cities, which could be contacted for obtaining machinery; during the course of study following machinery manufacturer was identified in Karachi:

Sama Engineering

Sama House, 2-A, 1/32, Nazimabad # 2
Karachi
Phone +9221-6602467, 6607131
URL: www.samaengineering.com.pk

From Lahore following may be contacted for the supply of packaging machinery.

Prime Tech International

Kamahan Road, Off Bank Stop, 16-KM. Ferozepur Road
Lahore
Phone : (92-42) 5822598
Fax : (92-42) 5821804

4.6 MACHINERY MAINTENANCE

Machinery is expected to be serviced on an annual basis. During the projection period, maintenance expenses are estimated to be around 3% of the total cost of machine.

5. LAND AND BUILDING REQUIREMENT

The pickle production, processing and Packaging setup is estimated to require a total area of 120-200 yards plot. This area will be used for production, packaging, storage and administration office.

5.1 BUILDING CONSTRUCTION COST

As per discussion with market experts, 120 – 200 Sq. Yards area is sufficient for the production facility. The factory would be located at any place in Karachi, where basic infrastructure and utilities i.e. water, electricity, gas and telephone are available. The place will be acquired on rent basis and necessary alterations will be required so as to facilitate the production and processing lines. The renovation and necessary alteration are estimated to cost around Rs. 150,000/-.

6. HUMAN RESOURCE REQUIREMENT

Pickle processing does not need specialized and skilled labor and even women can make good pickle. However packaging may need to hire trained labor having experience of operating packaging machinery. The proposed project would need a total of 8 persons in order to handle the processing and packaging operations. The business unit will work on one shift basis (8 hours daily). Technical staff for packaging and distribution purpose would require experience. Manpower requirement for the business operations along with their respective salaries is given in the table below:

Staff Title	No of Persons	Individual Salary	Monthly Salary	Annual Salary
1. Business Unit Manager/Owner				
Production Staff				
Supervisor / Manager	1	12,000	12,000	144,000
Packaging Staff	2	5,000	10,000	120,000
Processing Staff	3	5,000	15,000	180,000
Total Production Staff	6		37,000	444,000
General Administration Staff				
Accountant	1	8,000	8,000	96,000
Driver	1	4,000	4,000	48,000
Total G A /S Staff	2		12,000	144,000
TOTAL	8		49,000	588,000

7. FINANCIAL ANALYSIS & KEY ASSUMPTIONS

The project cost estimates for the proposed “Pickle Production, Processing, Packaging and Marketing unit” have been formulated on the basis of discussions with industry stakeholders and experts. The projections cover the cost of land, machinery and equipment including office equipment, fixtures etc. Assumptions regarding machinery have been provided, however, the specific assumptions relating to individual cost components are given as under.

7.1 LAND & BUILDING

Land and Building for setting up the proposed Pickle Processing and Packaging unit would be on rental basis which will cost around Rs. 25,000/- per month for a single storey 200 Sq. Yards area.

It has been assumed that it would be a developed land with basic infrastructure available. However, for the necessary construction, renovation and customization of the facility Rs. 150,000/- will be required, which has been assumed to depreciate at 10% per annum using diminishing balance method.

7.2 OVERALL FACTORY & OFFICE RENOVATION

To renovate the factory / office premises in Year 5 and Year 10, a cost would be incurred for which an amount equivalent to 5% of the total factory/office construction cost is estimated.

7.3 FACTORY / OFFICE FURNITURE

A lump sum provision of Rs. 100,000/- for procurement of office/factory furniture is assumed. This would include table, desk, chairs etc. The breakup of Factory Office Furniture & Fixtures is as follows:

Item	Number	Total Cost (Rs.)
Table & Chair for Owner and Guests	3	10,000
Tables & Chairs for Admin. Staff	1	4,000
Waiting Chairs	4	6,000
Curtains & Interior Decoration for office	-	10,000
Chairs for Workers/Labor	6	5,000
Electrical Fittings & Lights	-	50,000
Other Expenses	-	15,000
Total		100,000

7.4 DEPRECIATION TREATMENT

The treatment of depreciation would be on a diminishing balance method at the rate of 10% per annum on the following.

1. Machinery
2. Land & Building Construction
3. Vehicles
4. Furniture and Fixtures etc.

7.5 UTILITIES

Pickle processing and packaging unit will be operated using electricity for packaging purposes, while, substantial quantity of water will be consumed for washing and cleaning of fruits and vegetables. The cost of the utilities including electricity, fuel,

telephone, and gas is estimated to be around Rs. 372,000/- per annum. Details of the utilities have been provided below:

Utility	Total Monthly Cost (Rs.)	Total Annual Cost (Rs.)	Annual Increase in Cost (%)
1. Electricity	10,000	120,000	5%
2. Diesel for Vehicle	5,000	60,000	5%
3. Gas	6,000	72,000	5%
4. Telephone	5,000	60,000	5%
5. Water	5,000	60,000	5%
Total	31,000	372,000	

7.6 WORKING CAPITAL REQUIREMENTS

It is estimated that an additional amount of Rs. 550,000/- (approximately) will be required as cash in hand to meet the working capital requirements. These provisions have been estimated based on the following assumptions for the proposed business.

Description	Amount in Rs.
First Three Months Salaries (Production staff)	115,000
First Three Months Utilities Charges	93,000
First Three Months Misc. Expenses	15,000
First Three Months Rent Expense	75,000
Raw Material Inventory for One Month	250,000
Total	548,000

7.7 VEHICLE FOR SUPPORT AND MAINTENANCE SERVICES

A loading vehicle would be required for providing services for the transportation of raw material and finished products. For this purpose a transportation vehicle has been assumed which will cost around Rs. 400,000. A used or brand new Chinese vehicle can be purchased with in this amount.

7.8 SELLING & PROMOTIONAL EXPENSES

For the purpose of this pre-feasibility, it has been assumed that the Pickle processing and packaging unit will be engaged in local sales for which demand can be created through advertising, which is however difficult for a new setup as advertising draws substantial funds. Therefore, it has been assumed that relationship building will be followed by the business in order to create consistent demand for the product. For this purpose, an amount equivalent to 2% of the annual sales has been assumed. This amount will be utilized for business meetings, parties, gifts, sales promotions, etc.

7.9 DISTRIBUTION AND RETAILER MARGINS

Distributor and retailers are of primary importance in marketing Pickle and similar products, especially due to easy availability of alternate brands. This is the reason that, unlike other consumer goods, distribution and retailer margins are relatively higher. Therefore combined margin of 30% has been assumed for retailer and distributor.

7.10 MISCELLANEOUS EXPENSES

Miscellaneous expenses of running the business are assumed to be Rs. 5,000 per month. These expenses include various items like office stationery, daily consumables, traveling allowances etc. and are assumed to increase at a nominal rate of 10% per annum.

7.11 RAW MATERIAL INVENTORY

Based on our assumptions for the production facility, it would be necessary to maintain raw material inventory in order to avoid any unexpected price fluctuation. For this purpose one month inventory of pickle, glass bottles, labels and cartons has been assumed.

7.12 FINISHED GOODS INVENTORY

The proposed setup is assumed to maintain finished goods inventory to meet urgent supply orders which may arise from caterers and hotels. For this purpose, finished products equivalent to one month production will be maintained.

7.13 REVENUE PROJECTIONS

For the projection purposes, annual revenue growth rate of 5% has been assumed which would cover anticipated growth in the industry as well as price. Based on our discussions with the industry experts, following revenue related assumptions have been made on annualized basis with respect to different quantities of pickle packs, their prices and total revenue expected from each quantity pack.

No. of Packs (Grams)	Qty	Weight In KG	Retail Price (Rs.)	Total Revenue
330	15,000	4,950	40	600,000
450	15,000	6,750	60	900,000
1,000	10,000	10,000	110	1,100,000
1,800	8,000	14,400	180	1,440,000
5,000	5,000	25,000	370	1,850,000
		61,100		5,890,000

7.14 ACCOUNTS RECEIVABLES

Considering the industry norms, it has been assumed that 20% of the total sale will be on cash while remaining 80% sales will be on credit to local distributors. A collection period of 30 days has been assumed.

A provision for bad debts has been assumed equivalent to 1% of the annual credit sales.

7.15 FINANCIAL CHARGES

It has been assumed that long-term financing for 5 years will be obtained in order to finance the project investment cost. This leasing facility would be required at a rate of 15% (including 1% insurance premium) per annum with 60 monthly installments over a period of five years. The installments are assumed to be paid at the end of every month.

7.16 TAXATION

The business is assumed to be run as a sole proprietorship; therefore, tax rates applicable on the income of a non salaried individual taxpayer are used for income tax calculation of the business.

7.17 COST OF CAPITAL

The cost of capital is explained in the following table:

Particulars	Rate
Required return on equity	20%
Cost of finance	15%
Weighted Average Cost of Capital	17.5%

The weighted average cost of capital is based on the debt/equity ratio of 50:50.

7.18 OWNER'S WITHDRAWAL

It is assumed that the owner will draw funds from the business once the desired profitability is reached from the start of operations. The amount would depend on business sustainability and availability of funds for future growth.

- 7.20 ANNEXURES**
- 7. 20.1 Summary of Key Assumptions**
- 7. 20.2 Cost and Revenue Sheet**
- 7. 20.3 Projected Income Statement**
- 7. 20.4 Projected Balance Sheet**
- 7. 20.5 Projected Cash Flow Statement**

Summary of Key Assumptions		
Sr. No.	PARTICULARS	TOTAL COST/DETAILS
(in Pak. Rs.)		
Fixed Capital		
	Plant & machinery	500,000
	Vehicle for support and transportation	400,000
	Construction & Renovation	150,000
	Factory / Office Furniture	100,000
	Premises Advance Deposit (6 months)	150,000
	Total Fixed Capital	1,300,000
Working Capital		
	Utilities - Three Months (Office & Factory)	93,000
	1. Electricity/Month	10,000
	2. Diesel for Vehicles and Machinery	5,000
	3. Gas / Month	6,000
	4. Office Rent	25,000
	5. Telephone/Month	5,000
	6. Water	5,000
	Salaries - Three Months (Production Staff)	111,000
	Raw Material Inventory - One months	204,909
	Misc. Expenses - Three months (@ 5000 /month)	15,000
	Total Working Capital	423,909
	TOTAL PROJECT COST	1,723,909
	Loan Finance	861,955
	Equity Financing	861,955
	Debt:Equity Ratio (50:50)	50.00%
PROJECT RETURNS AND OTHER FINANCIAL		
	IRR	56%
	NPV	5,957,900
	Payback Period (Years)	2 Year 8 Months
	Debt Equity Ratio	50:50
	Cost of finance	15%
	Weighted Average Cost of capital	17.50%
OTHER ASSUMPTIONS		
	Depreciation	10%
	Machinery Annual Repair & Maintenance (as %age of total cost of Machinery)	3.00%
	Selling & Distribution Expenses	2.00%
Factory Operations and Capacity Utilisation Assumptions		
	Increase in Production (Annual)	10%
	Annual sales price increase	5%
	Operational Hrs./day	12
	Operational Days / Month	26
	Operational Months	12
	Annual Operational Days	312
Economy related assumptions		
	Electricity charges growth rate	5%
	Increase in Salaries - till fully capacity utilized	10%
	Increase in Salaries - after increase in capacity (after 6 year)	12%
	Increase in Misc. Expenses	10%
Cash Flow Assumptions		
	Sales on Credit - as %age of total	80%
	Sales on Cash - as %age of total	20%
	Accounts Receivable period (months) - only for 70% credit sales	1
	Provision for bad debts (only on 30% credit sales)	1%
	Distribution & Retailer Margin	30%
	Raw Material Inventory - (Days)	1
	Finished Goods Inventory - Month	1

Pickle Processing, Packaging & Marketing COST AND REVENUE SHEET		
1. REVENUE CALCULATION		
<u>Monthly Production</u>		
Maximum Capacity	100,000	Kilogram
Capacity Utilization	60%	Beginning of Year
Gross Annual Sales	5,890,000	Rs.
Estimated Finished Goods Inventory at the end of the Year	245,417	Rs
Total Annual Sales	5,890,000	Rs.
2. COST CALCULATION		
		Amount (Rs.)
Raw Material		2,139,162
Packaging Material		319,750
Annual Cost of Production		
Raw Material Cost	2,458,912	Rs. / annum
Total Annual Sales	5,890,000	Difference
Total Annual Cost	2,458,912	3,431,088

Pickle Processing, Packaging & Marketing										
Projected Income Statement (Rs.)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Net (Adjusted Sales)	5,599,427	6,778,408	7,830,411	9,045,610	10,449,313	12,070,753	13,943,696	16,107,142	18,606,141	21,492,723
Cost of Sales	3,142,912	3,445,203	3,777,124	4,141,606	4,541,875	4,981,477	5,558,698	6,214,773	6,962,631	7,817,668
Raw Material Cost	2,458,912	2,704,803	2,975,284	3,272,812	3,600,093	3,960,103	4,356,113	4,791,724	5,270,896	5,797,986
Labor (Production Staff)	444,000	488,400	537,240	590,964	650,060	715,066	880,962	1,085,345	1,337,145	1,647,363
Other Utilities	240,000	252,000	264,600	277,830	291,722	306,308	321,623	337,704	354,589	372,319
Gross Profit	2,456,515	3,333,205	4,053,288	4,904,004	5,907,438	7,089,276	8,384,998	9,892,369	11,643,510	13,675,055
Gross Profit Margin	44%	49%	52%	54%	57%	59%	60%	61%	63%	64%
General Administrative & Selling Expenses										
Salaries	144,000	158,400	174,240	191,664	210,830	231,913	255,105	280,615	308,677	339,544
Factory/Office Miscellaneous Expenses	60,000	66,000	72,600	79,860	87,846	96,631	106,294	116,923	128,615	141,477
Rent Expense	300,000	330,000	363,000	399,300	439,230	483,153	531,468	584,615	643,077	707,384
Amortization of Preliminary Expenses	-	-	-	-	-	-	-	-	-	-
Depreciation Expense	115,000	103,500	93,150	83,835	75,452	68,656	61,791	55,612	50,050	45,045
Maintenance Expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Distribution & Retailer Margin	1,679,828	1,847,811	2,032,592	2,235,851	2,459,436	2,705,380	2,975,918	3,273,510	3,600,861	3,960,947
Selling & Promotional Expense	111,989	135,568	156,608	180,912	208,986	241,415	278,874	322,143	372,123	429,854
Subtotal	2,425,817	2,656,279	2,907,190	3,186,422	3,496,780	3,842,148	4,224,449	4,648,417	5,118,403	5,639,252
Operating Income	30,698	676,926	1,146,098	1,717,582	2,410,657	3,247,128	4,160,549	5,243,952	6,525,107	8,035,803
Financial Charges (15% Per Annum)	120,921	100,802	77,450	50,343	18,879	-	-	-	-	-
Earnings Before Taxes	(90,223)	576,124	1,068,648	1,667,238	2,391,778	3,247,128	4,160,549	5,243,952	6,525,107	8,035,803
Tax	(18,045)	115,225	213,730	333,448	478,356	649,426	832,110	1,048,790	1,305,021	1,607,161
Net Profit	(72,178)	460,899	854,918	1,333,791	1,913,422	2,597,702	3,328,439	4,195,161	5,220,086	6,428,643
Monthly Profit After Tax	(6,015)	38,408	71,243	111,149	159,452	216,475	277,370	349,597	435,007	535,720

Pickle Processing, Pakaging & Marketing											
Projected Balance Sheet (Rs.)	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 Balance	219,000	(485,050)	(186,539)	473,239	1,559,635	3,160,300	5,652,631	8,845,472	12,872,237	17,888,018	24,065,236
Raw Material Inventory	204,909	204,909	225,400	247,940	272,734	300,008	330,009	363,009	399,310	439,241	483,166
Finished Goods Inventory	0	245,417	269,958	296,954	326,650	359,315	395,246	434,771	478,248	526,072	578,680
Accounts Receivable	0	376,306	451,894	522,027	603,041	696,621	804,717	929,580	1,073,809	1,240,409	1,432,848
Advnace Rent	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Total Current Assets	573,909	491,582	910,713	1,690,161	2,912,060	4,666,243	7,332,602	10,722,832	14,973,605	20,243,741	26,709,929
Fixed Assets											
Plant Machinery & Facility	500,000	450,000	405,000	364,500	328,050	295,245	265,721	239,148	215,234	193,710	174,339
Factory Construction	150,000	135,000	121,500	109,350	98,415	96,074	86,466	77,820	70,038	63,034	64,230
Land	0	0	0	0	0	0	0	0	0	0	0
Furniture & Fixtures	100,000	90,000	81,000	72,900	65,610	59,049	53,144	47,830	43,047	38,742	34,868
Vehicle	400,000	360,000	324,000	291,600	262,440	236,196	212,576	191,319	172,187	154,968	139,471
Total Fixed Assets	1,150,000	1,035,000	931,500	838,350	754,515	686,564	617,907	556,116	500,505	450,454	412,909
Intangible Assets											
Preliminary Expenses	0	0	0	0	0	-	-	-	-	-	-
Total Assets	1,723,909	1,526,582	1,842,213	2,528,511	3,666,575	5,352,807	7,950,509	11,278,948	15,474,110	20,694,196	27,122,838
Owner's Equity	861,955	789,777	1,250,676	2,105,594	3,439,384	5,352,807	7,950,509	11,278,948	15,474,110	20,694,196	27,122,838
Long Term Liability	861,955	736,805	591,537	422,917	227,191	0	0	0	0	0	0
Total Equity & Liabilities	1,723,909	1,526,582	1,842,213	2,528,511	3,666,575	5,352,807	7,950,509	11,278,948	15,474,110	20,694,196	27,122,838

Pickle Processing, Packaging & Marketing

Projected Statement of Cash Flows (Rs.)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cash Flow From Operating Activities											
Net Profit	0	-72,178	460,899	854,918	1,333,791	1,913,422	2,597,702	3,328,439	4,195,161	5,220,086	6,428,643
Add: Depreciation Expense	0	115,000	103,500	93,150	83,835	75,452	68,656	61,791	55,612	50,050	45,045
Amortization Expense	0	0	0	0	0	0	-	-	-	-	-
(Increase) / decrease in Receivables	-	(376,306)	(75,588)	(70,134)	(81,013)	(93,580)	(108,096)	(124,863)	(144,230)	(166,600)	(192,439)
(Increase) / decrease in RM	-	0	(20,491)	(22,540)	(24,794)	(27,273)	(30,001)	(33,001)	(36,301)	(39,931)	(43,924)
(Increase) / decrease in FG Inventory	-	(245,417)	(24,542)	(26,996)	(29,695)	(32,665)	(35,931)	(39,525)	(43,477)	(47,825)	(52,607)
Net Cash Flow From Operations	0	(578,900)	443,778	828,399	1,282,123	1,835,355	2,492,331	3,192,842	4,026,765	5,015,781	6,184,718
Cash Flow From Financing Activities											
Receipt of Long Term Debt	861,955										
Repayment of Long Term Debt		(125,149)	(145,268)	(168,620)	(195,727)	(227,191)	-	-	-	-	-
Owner's Equity	861,955										
Net Cash Flow From Financing Activities	1,723,909	(125,149)	(145,268)	(168,620)	(195,727)	(227,191)	0	0	0	0	0
Cash Flow From Investing Activities											
Capital Expenditure	(900,000)					(7,500)					(7,500)
Factory/Office Furniture	(100,000)										
Preliminary Operating Expenses	0										
Purchase of Raw Material Inventory	(204,909)										
Advance Rent	(150,000)										
Construction & Renovation	(150,000)										
Net Cash Flow From Investing Activities	(1,504,909)	0	0	0	0	(7,500)	0	0	0	0	(7,500)
NET CASH FLOW	219,000	(704,050)	298,510	659,779	1,086,396	1,600,665	2,492,331	3,192,842	4,026,765	5,015,781	6,177,218
Cash at the Beginning of the Period	0	219,000	(485,050)	(186,539)	473,239	1,559,635	3,160,300	5,652,631	8,845,472	12,872,237	17,888,018
Cash at the End of the Period	219,000	(485,050)	(186,539)	473,239	1,559,635	3,160,300	5,652,631	8,845,472	12,872,237	17,888,018	24,065,236

