

# Pre-Feasibility Study

## Apple Processing Unit



**Small and Medium Enterprise Development Authority**  
**Government of Pakistan**

[www.smeda.org.pk](http://www.smeda.org.pk)

HEAD OFFICE					
6 <sup>th</sup> Floor, LDA Plaza, Egerton Road, Lahore. Tel: (042) 111-111-456, Fax: (042) , 6304926, 6304927 <a href="mailto:Helpdesk@smeda.org.pk">Helpdesk@smeda.org.pk</a>					
REGIONAL PUNJAB	OFFICE	REGIONAL SINDH	OFFICE	REGIONAL OFFICE NWFP	REGIONAL OFFICE BALOCHISTAN
8th Floor, LDA Plaza, Egerton Road, Lahore. Tel: (042) 111-111-456 Fax: (042) 6304926, 6304927 helpdesk@smeda.org.pk		5 <sup>th</sup> 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) 2831623, 2831702 Fax: (081) 2831922 helpdesk-qla@smeda.org.pk

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## Introduction to SMEDA

The Small and Medium Enterprise Development Authority (SMEDA) was established with the objective to provide fresh impetus to the economy through the launch of an aggressive SME support program.

Since its inception in October 1998, SMEDA had adopted a sectoral SME development approach. A few priority sectors were selected on the criterion of SME presence. In depth research was conducted and comprehensive development plans were formulated after identification of impediments and retardants. The all-encompassing sectoral development strategy involved recommending changes in the regulatory environment by taking into consideration other important aspects including financial aspects, niche marketing, technology up gradation and human resource development.

SMEDA has so far successfully formulated strategies for sectors including, fruits and vegetables, marble and granite, gems and jewelry, marine fisheries, leather and footwear, textiles, surgical instruments, urban transport and dairy. Whereas the task of SME development at a broader scale still requires more coverage and enhanced reach in terms of SMEDA's areas of operation.

Along with the sectoral focus a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of viable business opportunities for potential SME investors. In order to facilitate these investors, SMEDA provides business guidance through its help desk services as well as development of project specific documents. These documents consist of information required to make well-researched investment decisions. Pre-feasibility studies and business plan development are some of the services provided to enhance the capacity of individual SMEs to exploit viable business opportunities in a better way. This document is in the continuation of this effort to enable potential investors to make well-informed investment decisions.

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<sup>1</sup> For more information on services offered by SMEDA, please visit our website: [www.smeda.org.pk](http://www.smeda.org.pk)

## **1 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, finance and business management.

## **2 PROJECT PROFILE**

The project is about starting the business of Apple Processing Unit at apple producing areas of Balochistan. The proposed plan is to offer complete setup of apple washing, waxing, grading, manual sorting, and packing facilities to make the investor competitive for both domestic and international apple markets.

### **2.1 Project Brief**

The project's objective is to treat, pack and market good quality apples through an effective distribution system within and outside the country. The entire process flow is semi-automatic requiring both skilled and unskilled workers. The unit will treat and pack apples on internationally acceptable standards making the final product compatible enough for export. The apple processing unit will be used to work on the post harvesting activity as a link between the international markets and the growers. The unit would add value to the fruit by bringing it to the international standards, giving it greater shelf-life and lowering the overall wastages.

### **2.2 Opportunity Rationale**

The human resource (labor) costs, in the Western Hemisphere and in developed countries, are much higher. Although, these countries now employ sophisticated farm machinery and implements, yet the production costs are on a higher side. So far, most of these countries compete due to heavy direct or indirect subsidies offered to them by governments and Trade Associations. However, under WTO (World Trade Organization) convention, of which Pakistan is also a member country, subsidies are totally discouraged. The rising production cost and diminishing subsidies would make it difficult for these countries to compete in the international markets whereas for Pakistan, due to much lower labor costs, the doors of opportunities would get even wider.

Balochistan Province is an agro-climatically diverse area suitable for the commercial production of numerous fruit crops. Significant market opportunities exist for those Balochistan fruit growers who can provide consistent supplies of high quality product at competitive market prices.

Little change has occurred in production technology, harvesting practices, packing, and post harvest care within the Balochistan fruit crops sector over the last decade. This stagnation has not allowed the provincial fruit industry to position itself in a competitive market. The domestic market is currently the only market outlet for Balochistan-grown fruits. However, prices have significantly eroded for apples and other fruit crops and the sustainability of the sector is

threatened. Increasing international competition from China, India, Iran, and other countries producing similar fruits as in Balochistan further threatens the domestic fruit industry. China has increased its export volume of apples to Pakistan, and has taken over a significant share of the Sri Lanka, Bangladesh, and Nepal fruit export markets that Pakistan once had. The fruit sector in Balochistan needs to continue to modernize in order to remain competitive and to increase its market share.

Improvements and innovations are needed all along the value chain in order to strengthen and modernize the fruit industry in Balochistan. This includes numerous production practices, pest management programs, harvesting methods, and post harvest care technologies. It will be necessary to address each of the constraints in an integrated manner in order for the fruit industry to be able to provide consistent supplies of high quality products.

Considering the entire value chain, constraints in the post harvest area are currently the most limiting and in need of immediate attention in order to improve the consistency and quality of Balochistan fruit crops. This includes product grading, waxing, cooling, packing, cold storage, and temperature/humidity control during distribution of the product to market. According to university and industry sources in Pakistan, an estimated 30% of the harvested fruits go waste during harvesting, transportation, packing, and storage.

There is almost a total absence of apple processing units at the level of the small-scale fruit farmers in Balochistan. The lack of appropriate grading, packing, cooling, and cold storage facilities severely limit the capabilities of apple producers to provide the market with consistent supplies of high quality processed apples and, on other hand, creates tremendous opportunity for investors to start proper apple processing and capture the maximum domestic and international market shares.

### **2.3 Market Entry Timing**

Apple harvesting season starts from July and ends at the end of November. Establishment of such a unit near the start of July would increase the project viability for getting maximum fresh apple inputs from the orchards. However, since apples will be available throughout the off season from cold stores, the unit could be operational year round based upon the investors decision and market demands.

### **2.4 Proposed Business Legal Status**

Although the legal status of the business tends to play an important role in any setup, the subject business setup is proposed to be operated on a sole proprietorship basis which may extend to partnership in case of future expansion. Also less complications and costs are involved in forming, administering and running such a setup and the tax rates applicable for such arrangement are lower than private or public limited.

### **2.5 Project Capacity**

The project is proposed to have capacity of processing 7 tons of apples per day. However, the project will run on 60% capacity initially and will grow its capacity utilization at 10% annually.

## 2.6 Project Investment

The total investment required for this project is Rs. 16.05 M. The investment mainly covers capital costs of 13.5 M and working capital requirement of 2.5 M.

## 2.7 Recommended Project Parameters

Capacity		Human Resource	Location		
7 Tons / Day (@ 100% Capacity Utilization)		29	Mastung, Pishin, Kalat, Killa Saifullah, Killa Abdullah, Ziarat and Quetta.		
Financial Summary					
Project Cost	IRR	NPV	Payback Period	Cost of Capital	
16.04 Million	47%	62,795,692	3.17 Yrs	12%	

## 2.8 Proposed Location

The proposed location for the project could be in any of the apple producing areas of Balochistan. However, the investor may consider establishing the unit in Quetta being the central city of the province but before considering this option, he/she should analyze the supply chain of apples and transportation arrangements etc. Major apple producing Districts of Balochistan are Mastung, Pishin, Kalat, Killa Saifullah, Killa Abdullah, Ziarat and Quetta.

## 2.9 Key Success Factors/Practical Tips for Success

- Location plays the most important role for such a project to capitalize on apple freshness.
- Trained personnel for the project would add towards the success of the project.
- Application of proper marketing techniques
- Established business networking



### 3 HORTICULTURE SECTOR ANALYSIS

#### 3.1 Pakistan Horticulture Sector Analysis

The area under production of fruits and vegetables has been given in Table 1 and 2, respectively. The Punjab has largest share in terms of both area and production, which signifies the importance of horticulture production. There has been increasing pressures on the agriculture to provide food for all and intensive cultivations of cereal crops in all provinces particularly in Punjab and Sindh. By virtue of area and production Punjab takes 47 & 63% share, respectively in the national fruit production. Balochistan is the second largest Province which contributes to 31% of our national fruit crop area, while contributes 15% only in the national fruit production. Sindh covers 16% in terms of area and 14% in terms of production. The share of NWFP in fruit production is 8%.

Despite the food security priority, the area and production of fruits has slightly increased in all four provinces, thus indicating that horticulture is becoming priority in terms of both area and production. The new cultivations of different fruit orchards would bear fruits in couple of years which will result in increase in the national production from 15-20%. The Fig. 1 indicates the percent share of fruits in terms of national production. Citrus stays at top with 31% share, followed by Mango 25%, Dates 9%, Guava 9%, Apple 5% while the rest include, Banana, Apricot, Grapes, Peach, Plum and dry fruits like walnut, pistachio and almonds. The overall view of the performance of horticulture (fruits & vegetables) is depicted by the data & figures given below:

**Table 1. Area under Fruits in Pakistan**

(000 Hectares)

Year	Punjab	Sindh	N.W.F.P	Balochistan	Pakistan
2002-03	340.0	118.3	45.0	148.2	651.7
2003-04	324.5	125.5	45.1	239.3	734.6
2004-05	376.9	126.7	46.0	245.5	795.3
2005-06	386.7	135.4	46.8	245.6	814.5
2006-07	395.2	143.4	46.9	247.4	832.9
2007-08	400.9	150.1	47.2	255.2	853.4

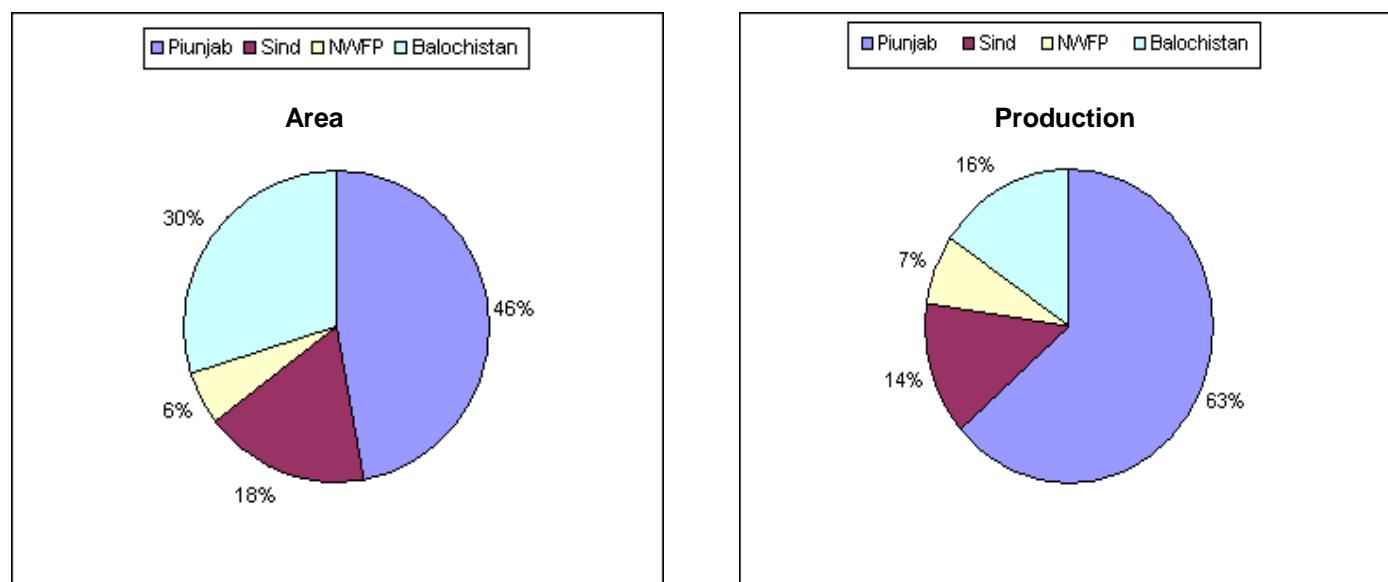
Source: Agricultural Statistics of Pakistan, MINFA, Islamabad

**Table 2. Production of Fruits**

(000 MT)

Year	Punjab	Sindh	N.W.F.P	Balochistan	Pakistan
2002-03	3419.0	907.8	504.8	909.9	5741.7
2003-04	3424.4	793.6	502.8	970.6	5691.6
2004-05	4196.8	943.5	513.0	983.0	6636.5
2005-06	4764.0	884.3	519.1	980.2	7147.6
2006-07	3744.9	888.8	516.1	861.5	6011.3
2007-08	4556.2	984.1	516.5	1122.0	7178.8

Source: Agricultural Statistics of Pakistan, MINFA, Islamabad

**Figure I: Share of Provinces in Area and Production of Fruits (2007-08)****Table 3. Fruit Area & Production over Five Years in Pakistan**

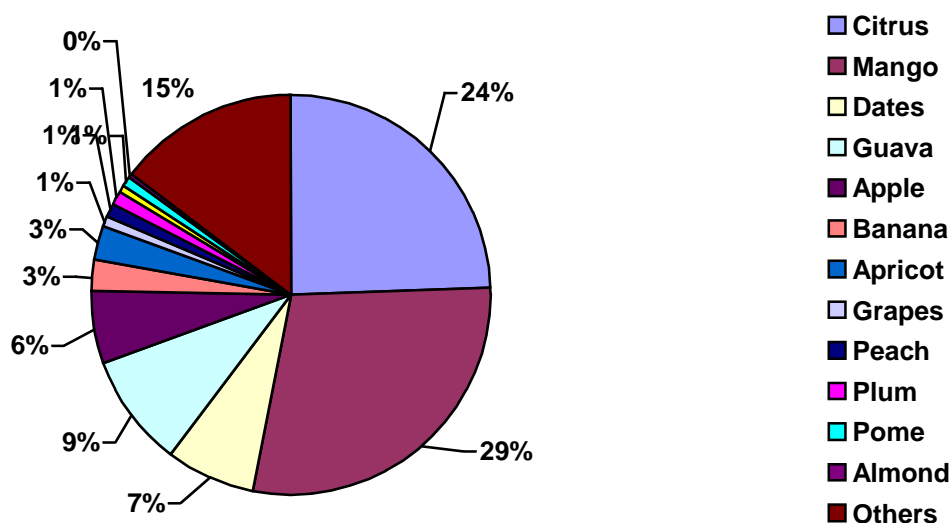
(Area in '000' ha, Production in '000' MT)

Crop	Year	2002-03	2003-04	2004-05	2005-06	2006-07
Citrus	Area	181.6	176.5	183.8	192.3	193.2
	Prod	1702.4	1760.3	1943.6	2458.4	1472.4
Mango	Area	102.8	103.1	151.1	156.6	164.5
	Prod	1034.6	1055.9	1673.9	1753.9	1719.2
Dates	Area	77.9	74.7	81.7	82.0	84.8
	Prod	625	426.8	622	496.6	426.3
Grapes	Area	12.7	12.7	12.9	13.0	13.8
	Prod	51.8	50.8	49.1	48.8	46.5
Apple	Area	47.7	110.7	111.1	112.0	112.6
	Prod	315.4	333.7	351.9	351.3	348.3
Apricot	Area	13.8	28.4	28.7	28.9	29.3
	Prod	129.7	210.9	205.2	197.2	177.2
Pear	Area	2.5	2.4	2.3	2.3	2.2
	Prod	32.3	30.6	30.4	28.3	28.2
Peach	Area	9.2	14.7	15.1	15.2	15.4
	Prod	76.3	76.2	69.5	70.3	71.2
Plum	Area	7.5	7.2	7.3	7.4	7.6
	Prod	65.8	64.2	60.7	60.0	60.4

Source: Agricultural Statistics of Pakistan, MINFA, Islamabad.

Shares of the production of major fruits in the total fruit production of Pakistan are shown in the following figure:

**Figure II: Analysis of Production of Fruits (2006-07)**



### 3.2 Balochistan Horticulture Sector Analysis

Balochistan has the second largest area under fruits in Pakistan. Its share in country's fruit area and production is 31 per cent and 15 per cent, respectively. The production of deciduous fruits (particularly apple) in Balochistan has a special significance among other fruit growing areas. The environmental conditions in Balochistan are far more suitable for the production of apples making it the largest planted and the second most produced fruit after dates in the province.

#### 3.2.1 Apple

Apple is grown in highlands of Balochistan and according to a survey conducted in 2007 by a private sector consultant, its total acreage and production figures are 24,405 and 238,787 respectively. In Balochistan, the share of apple is approximately 42 per cent in the total cultivated area under fruits and 23 per cent in terms of total fruit production. Mastung, Pishin, Kalat, Killa Saifullah and Killa Abdullah are the main apple producing districts of Balochistan.

**Table: 3.2-1 Apple Acreage and Production in Balochistan (District Wise) <sup>2</sup>**

S.No.	Districts	Acreage	Production (Tons)
1	Mastung	4,219	46,046
2	Pishin	4,654	45,344

<sup>2</sup> A survey conducted by private consultant in 2007 through SMEDA Balochistan, funded by USAID

3	Kalat	3,801	41,061
4	Killa Saifullah	5,904	38,869
5	Killa Abdullah	3,020	36,001
6	Ziarat	1,432	16,020
7	Quetta	1,375	15,446
<b>Total</b>		<b>24,405</b>	<b>238,787</b>

### 3.3 Exports Scenario

Pakistani apples have a considerable demand in the Middle East as well in the Far Eastern countries. However, this cash crop has yet to achieve the height it deserves. The export volume of apples is comparatively too low mainly due to lack of modern facilities such as processing, grading, waxing and polishing of the fruit. Pakistan exported 4,021 tones of apples in 1999-00 with export value of \$1.3 Millions. In the year 2000-01 and 2001-02, its exports from Pakistan gradually decreased to 1,475 and 818 tons respectively<sup>3</sup>. This shows lack of consistency in quality and proper grading. Pakistan is ranked at number eleven amongst the apple producing countries. The top apple producing countries are China, USA, France, Turkey, and Germany.

Major Apple Producing Countries		
No.	Country Name	Quantity (M. tones)
1	China	17,508,251
2	U.S.A.	04,963,900
3	France	02,500,000
4	Turkey	02,500,000
5	Germany	02,154,180
6	Italy	02,115,470
7	Iran	02,000,000
8	Argentina	01,347,315
9	India	01,300,000
10	Chile	880,000
11	Pakistan	600,000
12	South Africa	515,000
13	New Zealand	500,000
14	Netherlands	470,000
15	Belgium Luxembourg	413,230
16	Australia	360,000
<b>Total</b>		<b>26,127,346</b>

<sup>3</sup> <http://www.pakistaneconomist.com/issue2002/issue48&49/i&e6.htm>

Currently the major players in the export market are Iran, Chile, USA, Turkey, Australia, France and India. Pakistan can as well become one of the major exporters of apples if proper processing/grading, packing and storing techniques are used.

### **3.4 Weaknesses in Balochistan's Fruit Sector Practices**

#### **Grading**

Lack of product uniformity within a container is a serious constraint to marketing fresh fruit, particularly for export. It is very important to have as much uniformity in size, shape, and color within the package as possible. Many countries have national grade standards for each individual commodity that growers must adhere to in marketing their products. Such grade standards do not exist in Pakistan, and therefore a wide variation in fruit quality is common in the domestic market. This does not facilitate orderly marketing of the products and buyers are reluctant to pay premium prices because of this lack of product consistency. In some cases, apples, which have fallen from the tree onto the ground, are put on the bottom layers of the wooden crate and the better appearing fruit are packed on the top layers. Bruised and partially decayed fruit are often mixed in the same container as good fruit.

#### **Waxing**

A dull surface appearance diminishes the attractiveness of apples. Food-grade waxes are widely used internationally on apples to enhance their appearance and reduce shriveling. For those markets in which appearance is critical, apple growers should have available the capability to wax their fruit. The mechanics of waxing generally consists of applying a liquid form of wax to the dry surface of the fruit following washing. The procedure is generally automated and part of the packinghouse operation. However, waxing of individual apple fruit can be done where manual labor is adequate.

#### **Packing**

The packing materials used by the majority of Pakistani fruit growers are not conducive to protecting the product quality and are inferior in appearance and design for the export market. Unfinished 18-kg wooden crates are widely used for domestic marketing of apples. The outer appearance of the crate is not attractive and does not enhance the value of the product inside. Furthermore, the rough inner surface of the standard wooden crate can result in significant physical injury to the delicate skin of the commodity if it comes in direct contact with the rough wood surface. Newspaper and straw are commonly used to protect the fruit inside the wooden crate, but these materials are not appropriate for marketing fruit to supermarkets, high-end shops, or for export. Furthermore, the crates are often over-filled and considerable abrasion and compression bruising of the fruit occurs inside the crate. The additional weight of the wooden crates versus corrugated cartons results in higher transport costs. Food safety regulations and packing restrictions against the use of wood containers in many export markets will preclude the use of this type of packing in the international market. Strong, well-ventilated, attractive corrugated cartons are the norm in packing fruit for export.

### 3.5 General International Standards

- ✓ Minimum quality requirement
  - Practically free from pests
  - Sound (rotted or deteriorated product is excluded)
  - Clean (practically free from any foreign matter)
  - Intact
  - Free from damage caused by pests
  - No abnormal external moisture
  - Free of any foreign smell and / or taste
  - Carefully picked
- ✓ Classification of Apple
  - Extra Class: Superior in shape, size, coloring and the stalk must be intact.
  - Class I: Flesh must be perfectly sound. However slight defects in shape, development, and coloring allowed.
  - Class II: Flesh must be free from major defects. However defects in shape, development, and coloring allowed.
- ✓ Sizing

European Communities	Extra	Class I	Class II
Large Fruit Varieties	70 mm	65 mm	65 mm
Other Varieties	60 mm	55 mm	55 mm

Othe Countries	Extra	Class I	Class II
Large Fruit Varieties	65 mm	60 mm	60 mm
Other Varieties	60 mm	50 mm	50 mm

- ✓ Uniformity
  - Product must be of same origin, variety, quality, size and degree of ripeness
  - For “Extra Class”, uniformity also applies to coloring
  - Visible contents must be representative of the entire contents
- ✓ Packaging
  - It should protect the quality of the product
  - It must be new and clean
  - Printing or labeling should be done with non-toxic ink or glue
- ✓ Presentation
  - “Extra Class” fruit must be packed in layers.

## 4 PROCESS FLOW

- Washing and sterilization (Sanitation unit)

Apples are washed and disinfected with the introduction of chlorine and other chemical disinfectant.

- Sorting

The sorting of apples are carried out according to predetermined parameter as per demand led strategy.

- Defect Identification

The defected apples including culls are identified and are removed from the processing line.

- Waxing:

The apples are waxed to protect the fruit humidity.

- Additional protective coating:

An extra precautionary protective and decorative value added measure for top quality of apple as per the demand of the consumer market.

- Drying

After waxing the apples are dried through drying tunnel in a very precise manner.

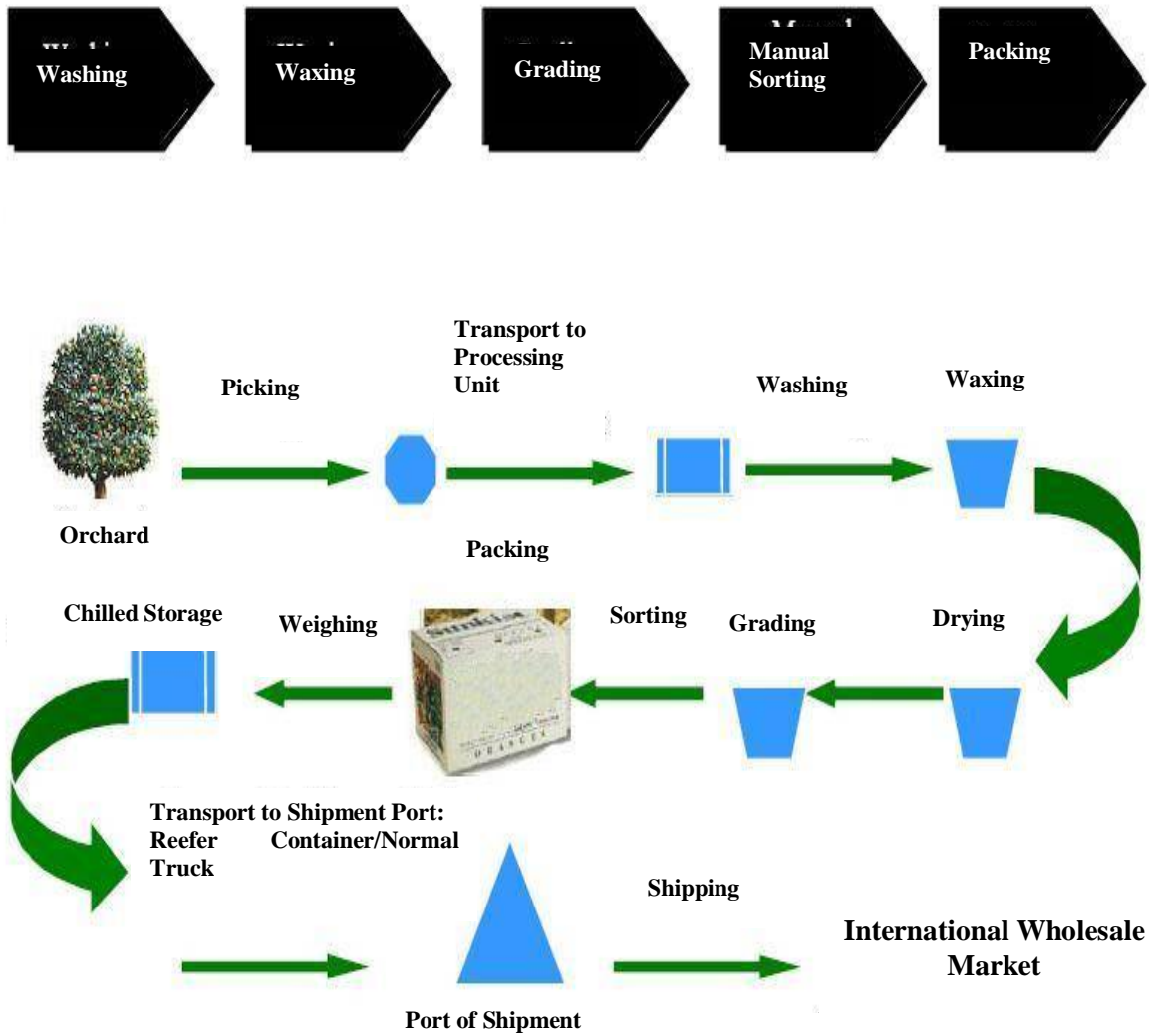
- Grading

- ✓ Color grading
- ✓ Size grading
- ✓ Weight grading
- ✓ Shape grading

- Packing

The packing of apples are carried out as per requirement. Mostly apples are packed in 5Kg and 10Kg (corrugated carton packs) for each variety of the graded fruit.

### 4.1 Process Flow Chart (Orchard to International Wholesale Market)





## **5 MARKETING STRATEGY**

### **5.1 Target Customers**

The target customers for Apple Processing Unit are domestic and international apple wholesalers and retailers. However, the investor may establish his/her own fruit shops in different areas depending upon the market demand.

### **5.2 Promotional Strategies**

Fruit consumers are getting hygiene conscious day by day throughout the country and abroad and try to purchase properly processed and packed fruits from well established stores. Such a growing demand can be properly tapped by following few of the below mentioned strategies.

#### *5.2.1 Promotion through media*

The most important issue when starting a new business idea is getting the word out. Using a web page is a popular way of doing this. Similarly, television and print media can also be very effective in spreading the news about a new brand amongst the general fruit consumers.

#### *5.2.2 Participation in fruit melas/fairs*

Participating in different fruit fares programs will increase the brand awareness in the local and international markets and will increase the chances of establishing business networking with different fruit buyers within and outside the country resulting in future supply orders.

#### *5.2.3 Location*

Location of the unit also could play an important role in marketing and promoting processed apples. A location near the fruit mandi would increase attraction from bulk apple buyers and suppliers. However, since proximity of the unit to the apple orchards is also equally important for reducing operational charges adding to net returns, therefore, the investor has to make the decision about Processing unit's location accordingly.

### **5.3 Pricing Strategy**

Pricing strategy plays important role in any business's success and sustainability. The investor is recommended to adopt different pricing strategy for domestic and international markets followed by extensive market research and updates.

## 6 PROJECT REQUIREMENTS

The project's main requirement would be the complete Apple Grading Unit. Other requirements include appropriate space, human resource, office equipments and basic utilities. These equipments are easily and readily available in the local markets.

### 6.1 Standards for Apple Processing/Grading and Waxing Plant (size: 42-45 fingers)

#### 6.1.1 Roller Feed Conveyer

Roller Belt Conveyer

Length: 6 Feet

Width: 3 Feet

Height: 3.5 Feet

Stand Size:

Channel Stand 2 X 4 , Mild Steel (M.S)	Gauge	12
Structure Sheet (Mild Steel)	Gauge	12
Supporting Sheet (Mild Steel)	Gauge	16

#### 6.1.2 Roller Sorting Conveyer

Length 8ft (length Adjustable)

Width (Net) 4ft (length Adjustable)

Arranged with sorting bins on both sides with belt underneath to send sorted fruit in main sorting conveyer

Rollers (Aluminum)	Gauge	14
Inner Sheet with Rollers (Stainless Steel)	Gauge	14
Channel Stand 2 X 4 , Mild Steel (M.S)	Gauge	12
Structure Sheet (Mild Steel)	Gauge	12
Supporting Sheet (Mild Steel)	Gauge	16

#### 6.1.3 Roller Brush Washer

Brush roller 30 with Food Grade brushing material (Imported EU, American or Equivalent)

Roller Shaft (S.S)

Inner Sheet with Rollers (S.S) Gauge 14

Channel Stand 2 X 4 (S.S) Gauge 12

Main Structure (S.S) Gauge 12

Supporting Sheet (S.S) Gauge 16

Conveyer with adjustable speed (1X25).

With 5X5 sprinkler shower at the top with imported rust free chain moveable structure, which can work in water humid working conditions (Sprinkler can be increased).

#### 6.1.4 Roller Foam Dryer

10 foam roller + 2 brush roller 1 at start and 1 at end

Foam roller press at the bottom for excessive water removal

Rollers (Foam & Bottom), Aluminium	Gauge	14
Inner Sheet with Rollers (Stainless Steel)	Gauge	14
Channel Stand 2 X 4	Gauge	12
Main Structure Steel	Gauge	12
Supporting Sheet	Gauge	16

(10 should be used for good results)

(Chamber /structure will be closed and fitted with a blower for good performance)

#### 6.1.5 Hot Air Dryer

Whole structure/chamber closed

Length 16ft

Width 4-5ft

Channel Stand 2 X 4 (M.S)	Gauge	12
Main Structure Steel (M.S)	Gauge	12
Supporting Structure Sheet (M.S)	Gauge	16
Fitted with S.S roller	Gauge	14
Inner Sheet with Rollers (Stainless Steel)	Gauge	14

Electric & Gas Burner options (Make: European Origin) with Automatic Temperature Control.

Blower Motor 2hp (Make: European Union or equivalent)

Shooter Fan, Blower with Aluminium/ appropriate Propellers (Gauge 16) fan blades 18 X 24 (With proper chimney for exhaust).

#### 6.1.6 Roller Sorter

Length 6ft (Adjustable)

Width 4ft (Adjustable)

With sorting bins on both sides with belt underneath to send sorted fruit main sorting conveyer

Rollers (Aluminium)	Gauge	14
Inner Sheet with Rollers (Stainless Steel)	Gauge	14
Channel Stand 2 X 4 , Mild Steel (M.S)	Gauge	12

Structure Sheet (Mild Steel)	Gauge	12
Supporting Sheet (Mild Steel)	Gauge	16

#### 6.1.7 Roller Waxing System

Channel Stand 2 X 4 (M.S)	Gauge	12
Main Structure Sheet (M.S)	Gauge	12
Supporting Structure Sheet (M.S)	Gauge	16
Roller Base (S.S)	Gauge	16
Inner Sheet with Rollers (Stainless Steel)	Gauge	14
Brush roller 10 with soft food grade brushing material (Imported EU, American or Equivalent)		

Stainless Steel Wax Spray Pump (European Origin or equivalent)

Spray nozzles 4-5, longitudinal side

Height adjustable

#### 6.1.8 Hot Air Dryer (II)

Whole structure/chamber closed

Length	18-19ft		
Width	4-5ft		
Channel Stand 2 X 4 (M.S)	Gauge	12	
Main Structure Steel (M.S)	Gauge	12	
Supporting Structure Sheet (M.S)	Gauge	16	
Fitted with S.S roller	Gauge	14	
Inner Sheet with Rollers (Stainless Steel)	Gauge	14	

Electric & Gas Burner options (Make: European Origin) with Automatic Temperature Control.

Blower Motor 2hp (Make: European Union or equivalent)

Shooter Fan, Blower with Aluminum Appropriate Propellers (Gauge 16) fan blades 18 X 24 (With proper chimney for exhaust).

#### 6.1.9 Roller Sorter

Length	8ft
Width	4ft

With sorting bins on both sides with belt underneath to send sorted fruit in main sorting conveyer

Rollers (Aluminium)	Gauge	14
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Inner Sheet with Rollers (Stainless Steel)	Gauge	14
Channel Stand 2 X 4 , Mild Steel (M.S)	Gauge	12
Structure Sheet (Mild Steel)	Gauge	12
Supporting Sheet (Mild Steel)	Gauge	16

#### 6.1.10 Sizer/Grader

42-45 fingers and 8 sizes with rollers and fingers with food grade rubber

Channel Stand 2 X 4 (M.S)	Gauge	12
Main Structure Sheet (M.S)	Gauge	12
Supporting Structure Sheet (M.S)	Gauge	16
Horizontal belt conveyer (M.S) 18inch wide (Belt Thickness 3mm, Food Grade) with packing trays (S.S)		

#### 6.1.11 Main Sorted Fruit Conveyers

Conveyer started from sorter 3 to the initial feeding tank at one side of the unit

Length according to the unit size

Width 12

Fitted with adjustable food grade rubber conveyer of 3mm thickness.

Conveyer Structure

Square Pipe 2 X2 (M.S)	14 Gauge
Supporting Steel Structure	16 Gauge

#### 6.1.12 Packing Conveyers and Trays

Total Length of conveyer belts	80ft X 26	
Structure (S.S)		
Square Pipe	Gauge	14
Supporting Sheet	Gauge	16
Packing trays (S.S)	8ft X 5ft	

- High class, rust free food grade spray paint is to be applied on all parts of the Plant.
- All the electricity panels connections and other accessories should be included.
- Supervision, installation and commissioning to complete supply in all respect also required.

All the motors, pumps, blowers should be brand new.

## 6.2 Estimated Cost of Apple Processing Unit

The above mentioned machinery specifications can be either imported or manufactured locally. The investor has to make the final decision after careful market analysis, project's input and output costs and other technical parameters. In this pre-feasibility report, locally manufactured machinery according to the specifications provided in the earlier section has been proposed due to its cost effectiveness. The machinery manufacturers are situated in Punjab. The estimated cost of the overall plant is **Rs. 3.8 Million**.

## 6.3 Human Resource Requirement

The manpower required for operating the project is as follows:

**Table 6.3-1 Human Resource Requirement Details**

Description	No.	Monthly Salary / Person	Total Monthly Salary	No. of Months / Year	Total Yearly Salary
Manager	1	25,000	25,000	12	300,000
Packers	8	10,000	80,000	3	240,000
Skilled Labor	14	7,000	98,000	6	588,000
Machine Mechanic	2	8,000	16,000	6	96,000
Accountant / Administrator	1	15,000	15,000	12	180,000
Peon	1	5,000	5,000	12	60,000
Security Guards	2	6,000	12,000	12	144,000
<b>Total</b>	<b>29</b>				<b>1,608,000</b>

*Note: The staff salaries are estimated according to the market trends; however, the investor may set different pay scales.*

## 6.4 Land and Building Requirement and Estimated Cost

**Table 6.4-1 Appropriate Land & Estimated Cost**

Description	Sq.Ft	Cost/Unit	Total Cost (PKR)
Land	20,000	100	2,000,000
<b>Total</b>			<b>2,000,000</b>

*Note: Cost/Sq.ft is taken keeping in view the average land prices at the farm sites. The investor may consider establishing the plant in developed parts of the province for which higher rates will be applicable.*

**Table 6.4-2 Building and Infrastructure Details & Cost**

Description	Sq.Ft	Cost/Sq.Ft	Total Cost (PKR)
Plant Area	6,000	700	4,200,000
Office and Admin Area	2,000	1,200	2,400,000
<b>Total</b>			<b>6,600,000</b>

## 6.5 Office Equipment, Furniture/Fixture and Vehicle Details and Estimated Cost

**Table 6.5-1 Office Equipment Details**

Description	Qty	Price/Unit	Total Cost (PKR)
Computers	2	30,000	60,000
Computer Printers	1	12,000	12,000
Telephone/intercom sets	5	1,000	5,000
Fax	1	12,000	12,000
<b>Total</b>			<b>89,000</b>

**Table 6.5-2 Furniture & Fixture Details**

Description	Qty	Price/Unit	Total Cost (PKR)
Carpeting			10,000
Office furniture			30,000
Air-conditioners	2	30,000	60,000
<b>Total</b>			<b>100,000</b>

**Table 6.5-3 Factory Vehicle**

Description	Qty	Price/Unit	Total Cost (PKR)
Shahzor Mini-Truck	1	800,000	800,000
Registration Cost			24,000
<b>Total</b>			<b>824,000</b>

## 6.6 Furniture and Equipment Maintenance

The furniture and equipment maintenance process will be conducted on yearly basis.

## 6.7 Utilities and Infrastructure Requirement

Basic utilities like electricity, gas and water are required for operating the project.

## **7 STARTING A SUCCESSFUL APPLE PROCESSING BUSINESS**

Starting and running any business that is unique in its kind is a bit difficult since no such industry experience will be available to the investor as well as the operating staff. Similarly, finding new markets and developing/maintaining good business relationships will take slightly more time. But rest assured there are ways to reduce the risks of becoming failure and achieve success. Following are some of the handy tips that can help run such a new project successful.

### **7.1 Work in a Similar or Related Business Venture**

One of the best ways to reduce the risk of owning a failed apple processing unit is to have some experience of a similar business activity before you start your own such as Kinnow or Mango processing which are abundantly located in Punjab. Many successful business owners have said that the best way to prepare for owning a similar setup is by working in one.

### **7.2 Know Your Target Market**

Who does the investor see as client/customer/consumer in his/her setup? Is he targeting wholesalers, retailers, individuals within the country or exports markets? Knowing the target market before starting planning will not only help the investor solidify his/her overall product quality but will also help determine the location, decor and the transportation means.

### **7.3 Develop a Business Plan**

Like any other type of new company/venture/business, an Apple Processing Unit will need a concise business plan. This plan should include but is not limited to: the overall concept and goal of the business, specific financial information and projections, a description of the target market, the final products and pricing, equipment and employee details, advertising and marketing plan, and a potential exit strategy.

### **7.4 Choose a Location & Layout**

For such a business, it is important to find a location that could help in continuous supplies of fresh apples from orchards in seasons and that could reduce the transportation costs from the orchards to the plant and from the plant to the markets. In addition, if the investor acquires the premises on rental basis, he/she should make sure that the monthly rent is in-line with the business plan's projections. Once the location is selected, the layout and design of the covered area should be in line with the overall apple processing and packing machinery requirements. Investor should already have a concept of a typical fruit processing unit business and bring the concept into the design of the overall structure with additional modifications as per his/her own requirements.

### **7.5 Getting the Appropriate Funding**

The business plan will help the investor recognize how much money he/she will need to start an Apple Processing Unit. If unsure about how much money will be needed upfront, talking to other similar business owners can help project the expected start-up costs.



## **7.6 Hiring Employees**

One of the biggest challenges any new business idea faces is the lack of quality and skilled/qualified human resource with respect to the level of technology needed. In order to get and retain good employees, the investor should make sure that the pay scales relate clearly to the job's duties and responsibilities. In addition, finding out what other similar setups are paying their employees would help the investor to stay competitive in the job market, without spending too much on payroll. However the investor should try linking the payroll with the bottom line and see how much money can be squeezed out for the employees. Similarly, giving priority of hiring the local people in the staff gives another advantage as they might be more aware of the local customs/traditions and would help develop such atmosphere to maximize production quantity and quality. In case of difficulty in finding trained/educated staff, investor may want to train the staff after hiring them according to the business needs and requirements.

## **7.7 Advertise & Market**

Every business needs a comprehensive marketing plan and such a setup that never has been well promoted before certainly would need a lot of concentration for its proper introduction in the market. After determining marketing budget, price out billboard advertising, flyers in newspapers, and local cable TV advertising. Ask the customers how they found out about your final product, so that you can record where the advertising and marketing money could be best spent.

## 8 PROJECT ECONOMICS

### 8.1 Project Cost

Description	Amount in (Rs.)
Land	2,000,000
Building & Infrastructure	6,600,000
Machinery & Equipment	3,800,000
Factory Vehicle	824,000
Furniture & Fixtures	100,000
Office Equipment	89,000
Pre-operating costs	71,545
<b>Total Capital Cost</b>	<b>13,484,545</b>
<b>Working Capital</b>	
Equipment Spare Parts Inventory	118,125
Raw Material Inventory	1,203,020
Upfront Insurance Payment	231,200
Cash	1,000,000
<b>Total Working Capital</b>	<b>2,552,345</b>
<b>Total Project Cost</b>	<b>16,036,890</b>

### 8.2 Project Returns

Description	Equity	Project
IRR	56%	47%
MIRR	34%	28%
Pay Back Period (Yrs)	3.07	3.17
Net Present Value (NPV)	46,820,711	62,795,692

### 8.3 Project Financing

Description	Percentage	Amount in Rs
Equity Financing	60%	9,622,157
Debt Financing	40%	6,414,733
<b>Total</b>		<b>16,036,890</b>

## 9 FINANCIAL ANALYSIS

Financial Evaluation of Apple Processing Unit Pre-feasibility										SMEDA
<b>Key Variables</b>										
Type of Machinery										Local Made
Total Investment in Project										16,036,890
Equity	60%									9,622,157
Debt	40%									6,414,733
Lease	0%									-
Interest Rate										16%
Debt Tenure										5
Total Number of Employees										29
Rs. in actuals										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Free Cash Flow to Equity (FCFE)	355,355	3,185,754	5,430,676	8,804,725	11,001,536	17,038,286	20,599,050	24,449,400	28,766,230	35,242,358
Free Cash Flow to Firm (FCFF)	2,088,676	4,951,908	7,234,916	10,653,147	12,901,206	17,038,286	20,599,050	24,449,400	28,766,230	48,020,253
Profit margin on sales	4%	9%	14%	17%	21%	23%	25%	27%	29%	31%
ROE	11%	29%	45%	59%	69%	72%	76%	80%	84%	87%
Times interest earned	2.53	6.03	12.51	26.38	66.65	-	-	-	-	-
		Equity	Project							
Internal Rate of Return (IRR)		56%	47%							
Modified Internal Rate of Return (MIRR)*		34%	28%							
Payback Period (yrs)		3.07	3.17							
Net Present Value (NPV)	@ 16%	46,820,711	@ 12%	62,795,692						
*Re-investment rate has been taken to be the interest on cash in bank, which in this case is 4%										

## 9.1 Projected Income Statement

Statement Summaries										SMEDA
	Rs. in actuals									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	28,728,000	36,823,500	46,242,000	57,167,775	66,318,289	72,890,268	80,119,444	88,071,539	96,818,843	106,440,877
Cost of goods sold	22,196,995	27,135,940	32,526,654	38,403,560	42,613,643	44,857,639	47,225,041	49,723,128	52,359,651	55,142,870
Gross Profit	6,531,005	9,687,560	13,715,346	18,764,215	23,704,646	28,032,628	32,894,403	38,348,411	44,459,192	51,298,007
<i>General administration &amp; selling expenses</i>										
Administration expense	752,400	825,655	906,042	994,255	1,091,057	1,197,284	1,313,853	1,441,772	1,582,145	1,736,185
Utilities expense	26,400	28,740	31,299	34,098	37,161	40,512	44,180	48,196	52,594	57,410
Travelling & Comm. expense (phone, fax, etc.)	684,000	750,595	823,674	903,868	991,870	1,088,440	1,194,412	1,310,702	1,438,314	1,578,350
Office vehicles running expense	115,360	126,896	139,586	153,544	168,899	185,788	204,367	224,804	247,284	272,013
Office expenses (stationary, etc.)	68,400	75,060	82,367	90,387	99,187	108,844	119,441	131,070	143,831	157,835
Promotional expense	287,280	368,235	462,420	571,678	663,183	728,903	801,194	880,715	968,188	1,064,409
Insurance expense	231,200	203,960	176,720	149,480	122,240	161,353	129,082	96,812	64,541	32,271
Professional fees (legal, audit, etc.)	86,184	110,471	138,726	171,503	198,955	218,671	240,358	264,215	290,457	319,323
Depreciation expense	893,700	893,700	893,700	893,700	893,700	994,312	994,312	994,312	994,312	994,312
Amortization expense	14,309	14,309	14,309	14,309	14,309	-	-	-	-	-
Miscellaneous expense	861,840	1,104,705	1,387,260	1,715,033	1,989,549	2,186,708	2,403,583	2,642,146	2,904,565	3,193,226
Subtotal	4,021,073	4,502,325	5,056,103	5,691,856	6,270,109	6,910,815	7,444,785	8,034,744	8,686,232	9,405,333
Operating Income	2,509,932	5,185,235	8,659,243	13,072,360	17,434,537	21,121,813	25,449,618	30,313,667	35,772,960	41,892,674
Other income	83,198	107,358	146,501	201,809	245,254	324,068	466,400	618,744	782,340	992,518
Gain / (loss) on sale of assets	-	-	-	-	329,600	-	-	-	-	-
Earnings Before Interest & Taxes	2,593,130	5,292,593	8,805,744	13,274,168	18,009,391	21,445,881	25,916,018	30,932,411	36,555,300	42,885,191
Interest expense	1,026,357	877,115	703,995	503,175	270,223	-	-	-	-	-
Earnings Before Tax	1,566,773	4,415,478	8,101,749	12,770,993	17,739,168	21,445,881	25,916,018	30,932,411	36,555,300	42,885,191
Tax	344,690	971,405	1,782,385	2,809,619	3,902,617	4,718,094	5,701,524	6,805,130	8,042,166	9,434,742
<b>NET PROFIT/(LOSS) AFTER TAX</b>	<b>1,222,083</b>	<b>3,444,073</b>	<b>6,319,364</b>	<b>9,961,375</b>	<b>13,836,551</b>	<b>16,727,787</b>	<b>20,214,494</b>	<b>24,127,280</b>	<b>28,513,134</b>	<b>33,450,449</b>
Balance brought forward		1,222,083	2,333,078	4,326,221	7,143,798	10,490,174	13,608,981	16,911,737	20,519,509	24,516,322
Total profit available for appropriation	1,222,083	4,666,156	8,652,442	14,287,596	20,980,349	27,217,961	33,823,475	41,039,018	49,032,643	57,966,771
Owner's Withdrawals	-	2,333,078	4,326,221	7,143,798	10,490,174	13,608,981	16,911,737	20,519,509	24,516,322	28,983,385
Balance carried forward	1,222,083	2,333,078	4,326,221	7,143,798	10,490,174	13,608,981	16,911,737	20,519,509	24,516,322	28,983,385

## 9.2 Projected Balance Sheet

Statement Summaries											SMEDA
											Rs. in actuals
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Assets</b>											
<i>Current assets</i>											
Cash & Bank	1,902,265	2,257,620	3,110,296	4,214,750	5,875,678	6,387,039	9,816,344	13,503,656	17,433,547	21,683,455	27,942,428
Accounts receivable	-	2,361,205	2,693,897	3,413,651	4,249,717	5,074,770	5,720,900	6,288,070	6,911,958	7,598,235	8,353,139
Finished goods inventory	-	493,267	603,021	722,815	853,412	946,970	996,836	1,049,445	1,104,958	1,163,548	1,225,397
Equipment spare part inventory	118,125	151,939	191,443	237,449	276,331	304,655	335,882	370,310	408,266	450,114	-
Raw material inventory	300,755	386,846	487,426	604,561	703,557	775,672	855,178	942,834	1,039,475	1,146,021	-
Pre-paid insurance	231,200	203,960	176,720	149,480	122,240	161,353	129,082	96,812	64,541	32,271	-
<b>Total Current Assets</b>	<b>2,552,345</b>	<b>5,854,837</b>	<b>7,262,802</b>	<b>9,342,705</b>	<b>12,080,935</b>	<b>13,650,458</b>	<b>17,854,223</b>	<b>22,251,128</b>	<b>26,962,746</b>	<b>32,073,643</b>	<b>37,520,964</b>
<i>Fixed assets</i>											
Land	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Building/Infrastructure	6,600,000	6,270,000	5,940,000	5,610,000	5,280,000	4,950,000	4,620,000	4,290,000	3,960,000	3,630,000	3,300,000
Machinery & equipment	3,800,000	3,420,000	3,040,000	2,660,000	2,280,000	1,900,000	1,520,000	1,140,000	760,000	380,000	-
Furniture & fixtures	100,000	90,000	80,000	70,000	60,000	50,000	40,000	30,000	20,000	10,000	-
Office vehicles	824,000	659,200	494,400	329,600	164,800	1,327,060	1,061,648	796,236	530,824	265,412	-
Office equipment	89,000	80,100	71,200	62,300	53,400	44,500	35,600	26,700	17,800	8,900	-
<b>Total Fixed Assets</b>	<b>13,413,000</b>	<b>12,519,300</b>	<b>11,625,600</b>	<b>10,731,900</b>	<b>9,838,200</b>	<b>10,271,560</b>	<b>9,277,248</b>	<b>8,282,936</b>	<b>7,288,624</b>	<b>6,294,312</b>	<b>5,300,000</b>
<i>Intangible assets</i>											
Pre-operation costs	71,545	57,236	42,927	28,618	14,309	-	-	-	-	-	-
<b>Total Intangible Assets</b>	<b>71,545</b>	<b>57,236</b>	<b>42,927</b>	<b>28,618</b>	<b>14,309</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>TOTAL ASSETS</b>	<b>16,036,890</b>	<b>18,431,372</b>	<b>18,931,329</b>	<b>20,103,223</b>	<b>21,933,444</b>	<b>23,922,019</b>	<b>27,131,471</b>	<b>30,534,064</b>	<b>34,251,370</b>	<b>38,367,955</b>	<b>42,820,964</b>
<b>Liabilities &amp; Shareholders' Equity</b>											
<i>Current liabilities</i>											
Accounts payable	-	1,760,472	2,158,128	2,592,003	3,060,593	3,391,687	3,565,933	3,749,370	3,942,504	4,145,877	4,215,422
<b>Total Current Liabilities</b>	<b>-</b>	<b>1,760,472</b>	<b>2,158,128</b>	<b>2,592,003</b>	<b>3,060,593</b>	<b>3,391,687</b>	<b>3,565,933</b>	<b>3,749,370</b>	<b>3,942,504</b>	<b>4,145,877</b>	<b>4,215,422</b>
<i>Other liabilities</i>											
Deferred tax	-	344,690	418,000	418,000	418,000	418,000	334,400	250,800	167,200	83,600	-
Long term debt	6,414,733	5,481,970	4,399,966	3,144,841	1,688,896	-	-	-	-	-	-
<b>Total Long Term Liabilities</b>	<b>6,414,733</b>	<b>5,826,660</b>	<b>4,817,966</b>	<b>3,562,841</b>	<b>2,106,896</b>	<b>418,000</b>	<b>334,400</b>	<b>250,800</b>	<b>167,200</b>	<b>83,600</b>	<b>-</b>
<i>Shareholders' equity</i>											
Paid-up capital	9,622,157	9,622,157	9,622,157	9,622,157	9,622,157	9,622,157	9,622,157	9,622,157	9,622,157	9,622,157	9,622,157
Retained earnings	-	1,222,083	2,333,078	4,326,221	7,143,798	10,490,174	13,608,981	16,911,737	20,519,509	24,516,322	28,983,385
<b>Total Equity</b>	<b>9,622,157</b>	<b>10,844,240</b>	<b>11,955,235</b>	<b>13,948,378</b>	<b>16,765,955</b>	<b>20,112,331</b>	<b>23,231,138</b>	<b>26,533,894</b>	<b>30,141,666</b>	<b>34,138,478</b>	<b>38,605,542</b>
<b>TOTAL CAP AND LIAB</b>	<b>16,036,890</b>	<b>18,431,372</b>	<b>18,931,329</b>	<b>20,103,223</b>	<b>21,933,444</b>	<b>23,922,019</b>	<b>27,131,471</b>	<b>30,534,064</b>	<b>34,251,370</b>	<b>38,367,955</b>	<b>42,820,964</b>

### 9.3 Projected Cash Flow Statement

Statement Summaries											SMEDA
											Rs. in actuals
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit	-	1,222,083	3,444,073	6,319,364	9,961,375	13,836,551	16,727,787	20,214,494	24,127,280	28,513,134	33,450,449
Add: depreciation expense	-	893,700	893,700	893,700	893,700	893,700	994,312	994,312	994,312	994,312	994,312
amortization expense	-	14,309	14,309	14,309	14,309	14,309	-	-	-	-	-
Deferred income tax	-	344,690	73,310	-	-	-	(83,600)	(83,600)	(83,600)	(83,600)	(83,600)
Accounts receivable	-	(2,361,205)	(332,692)	(719,753)	(836,066)	(825,053)	(646,130)	(567,171)	(623,888)	(686,277)	(754,904)
Finished good inventory	-	(493,267)	(109,754)	(119,794)	(130,598)	(93,557)	(49,867)	(52,609)	(55,513)	(58,589)	(61,849)
Equipment inventory	(118,125)	(33,813)	(39,504)	(46,006)	(38,882)	(28,324)	(31,227)	(34,428)	(37,957)	(41,847)	450,114
Raw material inventory	(300,755)	(86,091)	(100,580)	(117,135)	(98,997)	(72,115)	(79,506)	(87,656)	(96,640)	(106,546)	1,146,021
Advance insurance premium	(231,200)	27,240	27,240	27,240	27,240	(39,113)	32,271	32,271	32,271	32,271	32,271
Accounts payable	-	1,760,472	397,656	433,875	468,590	331,094	174,246	183,436	193,135	203,372	69,545
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
<b>Cash provided by operations</b>	<b>(650,080)</b>	<b>1,288,118</b>	<b>4,267,758</b>	<b>6,685,801</b>	<b>10,260,670</b>	<b>14,017,492</b>	<b>17,038,286</b>	<b>20,599,050</b>	<b>24,449,400</b>	<b>28,766,230</b>	<b>35,242,358</b>
<i>Financing activities</i>											
Change in long term debt	6,414,733	(932,762)	(1,082,004)	(1,255,125)	(1,455,945)	(1,688,896)	-	-	-	-	-
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	9,622,157	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
<b>Cash by financing activities</b>	<b>16,036,890</b>	<b>(932,762)</b>	<b>(1,082,004)</b>	<b>(1,255,125)</b>	<b>(1,455,945)</b>	<b>(1,688,896)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Investing activities</i>											
Capital expenditure	(13,484,545)	-	-	-	-	(1,327,060)	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
<b>Cash by investing activities</b>	<b>(13,484,545)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(1,327,060)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>NET CASH</b>	<b>1,902,265</b>	<b>355,355</b>	<b>3,185,754</b>	<b>5,430,676</b>	<b>8,804,725</b>	<b>11,001,536</b>	<b>17,038,286</b>	<b>20,599,050</b>	<b>24,449,400</b>	<b>28,766,230</b>	<b>35,242,358</b>
Cash balance brought forward		1,902,265	2,257,620	3,110,296	4,214,750	5,875,678	6,387,039	9,816,344	13,503,656	17,433,547	21,683,455
Cash available for appropriation	1,902,265	2,257,620	5,443,374	8,540,971	13,019,476	16,877,214	23,425,325	30,415,394	37,953,056	46,199,777	56,925,813
Owner's Withdrawals	-	-	2,333,078	4,326,221	7,143,798	10,490,174	13,608,981	16,911,737	20,519,509	24,516,322	28,983,385
Cash carried forward	1,902,265	2,257,620	3,110,296	4,214,750	5,875,678	6,387,039	9,816,344	13,503,656	17,433,547	21,683,455	27,942,428

## 10 KEY ASSUMPTIONS

### 10.1 Project Capacity Assumptions

Description	Details
Plant production capacity	7 Tons / Day
Assumed total No. of Business Days	6 Months (180 days)
Assumed Hours / Day of operations	12
Assumed Capacity Utilization 1 <sup>st</sup> Year	60%
Assumed Growth in Capacity Utilization	10%
Maximum Attainable Capacity	95%

### 10.2 Revenue Assumptions

Description	Calculation
Sale Price / Kg	Rs. 50
Sale Price Growth Rate / Year	10%
Production (Year 1) @ 60% capacity utilization	756,000 Kgs
Wastages (@ 25%)	189,000 Kgs
Processed Apples Sold	567,000 Kgs
<b>1<sup>st</sup> Year Revenue from Processed Apples</b>	<b>Rs. 50 * 567,000 Kgs = Rs. 28,350,000</b>
<b>1<sup>st</sup> Year Additional Income (sale of wastages)</b>	<b>Rs. 2.0 * 189,000 Kgs = Rs. 378,000</b>
<b>Total Revenue in Year 1</b>	<b>Rs. 28,728,000</b>

### 10.3 Economic Assumptions

Electricity Price Growth Rate	10%
Gas Price Growth Rate	10%
Water Price Growth Rate	5%
Salary Growth Rate	10%

### 10.4 Expense Assumptions

Administrative Benefit Expense	10% of administration expense
Travelling Expense	50% of administration expense

Telephone and Internet Expense	50% of administration expense
Office Vehicle Running Expense	14% of vehicle cost
Office Expense	10% of administration expense
Promotional Expense	1% of revenue
Professional Fee (Legal, Audit etc)	0.3% of revenue
Machinery & Equipment Insurance Rate	5%
Office Vehicle Insurance Rate	5%
Operating Cost Growth Rate	5%

### 10.5 Depreciation Expense Assumptions

Depreciation Method	Straight Line
Machinery & Equipment	10%
Furniture & Fixtures	10%
Office Equipment	10%
Office Vehicle	20%

### 10.6 Cost of Goods Sold

All the direct costs that directly affect the revenue of any project are called Cost of Goods Sold (COGS). For a Gaming Zone, following are the components and estimated value of COGS in the first year:

Description	1 <sup>st</sup> Year's Cost (PKR)
Cost of Apples from Farm	Rs. 20 / Kg
Raw Material Cost	Rs. 20 * 756,000 Kgs = <b>Rs. 15,120,000</b>
Packing Material Cost	Rs. 5.16 / Kg
Total Packing Cost	Rs. 5.159 * 567,000 Kgs = <b>Rs. 2,925,295</b>
Direct Labor Cost	<b>Rs. 693,000</b>
Transportation Cost	<b>Rs. 2,835,000</b>
Direct Electricity Cost	<b>Rs. 567,000</b>
Direct Water Cost	<b>Rs. 56,700</b>
<b>Total COGS</b>	<b>Rs. 22,196,995</b>



**10.7 Cash flow Assumptions**

Accounts Receivables Cycle (In Days)	30
Accounts Payable Cycle (In Days)	30
Initial Cash in Hand	1,000,000

**10.8 Financing Assumptions**

Debt	40%
Equity	60%
Long Term Debt Interest Rate	16%
Tax Treatment	Sole proprietorship
Discount Rate for NPV (WACC)	12 %