Feasibility study: Apple packaging and grading unit for Balochistan

PAFAID

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Measurement Table

1 US Dollar	160.38 Pakistani Rupees
1 Square Yard	9 Square foot
1 Ton	1000 Kilagorams
1 Hectare	2.47105 Acres

ABBREVIATIONS

UNIDO	United Nations industrial development organisation
TBT	Technical barriers to trade
WTO	World Trade Organisation
SPS	Sanitary and phytosanitary standards
SMEDA	Small and Medium Enterprises Development Authority
PKR	Pakistan Rupee (Rs.)
Kg	Kilogram
UAE	United Arab Emirates
KM	Kilometre
GST	Goods and services tax
US	United States

Executive summary

Baluchistan produces an abundant variety of apples that are consumed locally and also transported to other parts of the country. Despite the large quantities of good quality apples produced in the province, the farmers and government are missing on the opportunity of maximizing profits by adopting more industrialized and market compliant practices in terms of safety and quality. Apple has limited shelf life and low market appeal and due to the non-availability of a grading and packaging unit the farmers are forced to sell their produce at low prices and experience high post-harvest losses.

This unit will treat and pack apples in line with internationally acceptable standards, improving the shelf life and marketability of the apples and make them compatible for supply to the high end markets locally and internationally. The unit will focus on grading, waxing and packing of apples that will add value to the product and in turn fetch greater revenues for the farmers and local and national government. The unit will also provide employment opportunities to skilled and semi-skilled staff.

The proposed unit requires a total investment of approximately PKR. 51 million which includes capital cost of PKR. 31.8 million and total working capital of 19.2 million. The production capacity of the unit is 2 tons per hour which will operate 8 hours a day and 180 days in a year.

Introduction

Balochistan is a key contributor of apple production in Pakistan with approximately 80 percent of the total national production. According to the Provincial Crops Reporting Service Center, apple is the most planted fruit (in hectares) and the highest produced fruit in the province with total production at 491,827 tons (2017-2018). Climatic conditions favor the production of deciduous fruits in Baluchistan compared to other regions of the country. This makes apple one of the most important crops for the province in terms of the value of output, revenue generation and total number of people employed. The fruit production usually exceeds the local consumption which results in export of the surplus to other provinces without any food security issues.

Despite the surplus production, its economic potential is not fully realized due to minimal preservation and processing, value addition, lack of infrastructure (transportation and storages) and poor access to markets. Inexistence of these facilities results in farmers selling their produce at low prices and makes it impossible for their product to compete with local high end and international markets.

Another major issue for apple production in the province is declining water resources and drought which directly affects the livelihoods of the rural population that are dependent on agriculture as a source of income. The federal and provincial governments are partnering to mitigate the impacts of these droughts through introduction of new rootstocks, modernizing irrigation systems and construction of dams but these are all medium to long term solutions. These interventions are also capital intensive and sociopolitical in nature which are not highly reliable. Therefore a more suitable and effective intervention in the short to medium term would be to extract more value from existing production through reduction of post-harvest losses, improving shelf life through preservation techniques, value addition and better access to markets. An intervention in the fruit preservation and processing sector in Baluchistan has a huge potential and can also be beneficial for the livelihoods of the rural communities which the industry can commence by itself.

1.1 Market analysis

An apple processing unit in Baluchistan can be very beneficial in adding value to the huge quantities of apples produced locally and serve as an import substituted product in case it is able to comply with the requirements of buyers from high-end markets. Good quality with a consistent supply of locally produced fruit can be sourced at a reasonable price with minimal transportation costs. The perishable nature of the fruit with high percentage of post-harvest losses and minimal value addition makes it a lucrative investment. Apples are consumed in huge quantities throughout Pakistan and in the international market as well. However, when it comes national and international trade, local fresh apple needs to compete with large-scale producers, like China, Iran or Turkey, having modernized and

well-equipped apple sector. For this reason, the introduction of new technologies can further improve the economy of scale and in turn efficiency of the value chain.

1.1.1 Current challenges for investment

The main challenges for such an investment in Baluchistan include lack of human and financial resources along with the lack of electricity and water sources. There is low awareness with regards to the benefits of these processing technologies and techniques. Despite some existing facilities, the province still lacks cold storage facilities with adequate application and proper transportation network. There are currently no packing units in the province which are necessary to maintain the quality of apples after being processed and preserved. Other major challenges for the investment are lack of credit facilities, electricity and water shortages which are required for appropriate processing of the product. The security situation in the province is also a major barrier for many investors. The provincial government and community-based organizations should also play their role in promoting and facilitating any private sector investments from other provinces.

1.1.2 Status of industrial processing

Currently, in Baluchistan there are no functional industrial level units for apple packaging, grading, and processing and most of it is done in major cities of Sindh and Punjab. In case of product packaging currently applied for fresh produce apple, they are also purchased from other parts of the country.

2. Methodology

This study is a result of a consultative process where UNIDO experts conducted discussions with various stakeholders in November and December 2019. A detailed research was also conducted in the form of apple value chain analysis in Baluchistan. Further discussions and inputs were received from stakeholders including progressive farmers, Agriculture Department, horticulture society and academia. The outcome of the report will be shared with relevant agriculture departments and report will be finalized in consultation with all stakeholders to ensure the credibility and reliability of the information.

3. Rationale for establishing the unit

This section will explain the economic, social and environmental viability of establishing an apple packaging and grading unit in Baluchistan.

3.1 Economic Factors

Nature has bestowed the province with a lot of natural resources and favorable climate conditions for the production of fruits such as apples, dates, grapes and apricots. The provinces geo-strategic location and under developing Gwadar port which is around 900 km from Quetta will provide the shortest and fasted access to the warm waters of the Arabian sea giving it a direct access to Central Asian Republics. Apples produced and processed in a food safety compliant manner will increase the product shelf life and as a result it could be sold to local high-end markets as well as transported to other major cities within Pakistan and abroad. For international export, the application of adequate product packaging, complying with technical barriers to trade (TBT) measures, and establishment of a traceability scheme will be required along with relevant phytosanitary certifications.

Since quality apples are produced in vast quantities in the province, the product can be sourced locally at a reasonable price with low transportation costs. Graded, waxed and properly packed apples can be supplied to local high-end markets which will fetch a higher price benefiting the owner of the unit as well as the local farmer community.

3.1.1 Government incentives for the sector

The federal and provincial governments are partnering to mitigate the water shortages through the construction of dams and modern irrigation systems. The Export promotion Bureau, Quetta has been organizing apple shows in Quetta since 1994, in collaboration with the Department of Agriculture.

The Department of Agriculture provides services in agricultural research, agricultural extension and agricultural engineering at the district levels. Their services include subsidizing and introducing new variety of seeds, introducing new technologies and techniques and on farm water management. Overall spending by the government on infrastructure, water availability, energy and security will remove further bottle necks and expand the opportunity for business in the province.

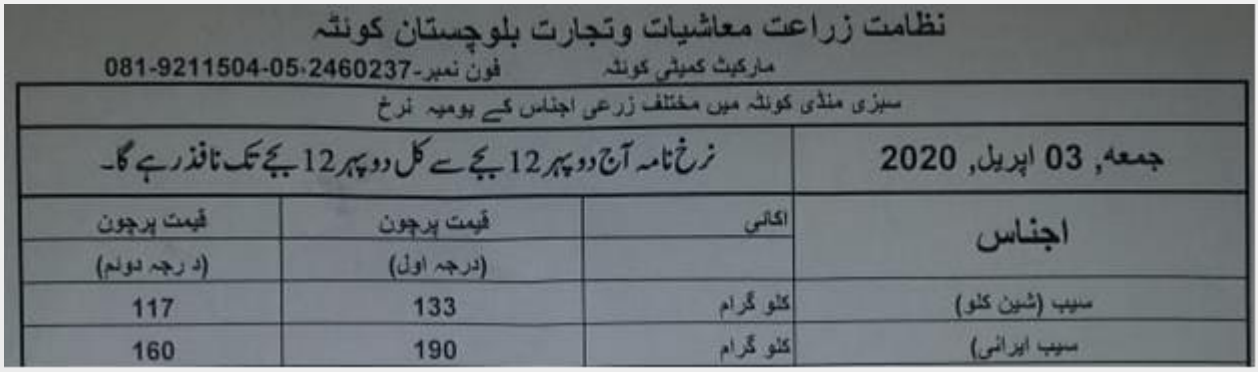
3.1.2 Export potential

According to provincial crops reporting the total production of apple is 491,827 tons (2017-2018) which exceeds the total local consumption making it available for export but the true potential of apples is yet to be tapped. One of the main reasons for low export volume is the absence of treatment plants required to treat and pack the apples according to international standards.

Since there is a wide range of different varieties of apples, each having different market price, also depending on the production techniques (organic, bio or other) and packaging, the marketing remains a huge issue when it comes to volume. Other neighboring countries already export a large volume globally and market price and quality should be competent. Pakistan will compete with others, especially when it comes to bulk compliant and high quality products. However, huge potentials still remain within Pakistan due to the population size of the country. Furthermore, if the required infrastructure is made available there is a huge market potential for Balochistan apples in the Middle East, Hong Kong, Sri Lanka, Bahrain, Japan, Kenya, Malaysia and Saudi Arabia.

Table A below shows the current price of apples per KG in Baluchistan as of 3 April, 2020. The price of A grade Shin Kulu is Rs. 133 per KG and B grade is Rs. 117 per KG. The price of A grade Irani apple is Rs. 190 per KG and B grade is Rs. 160 per KG.

Table A



نظامت زراعت معاشیات وتجارت بلوچستان کوئٹہ

مارکیٹ کمیٹی کوئٹہ فون نمبر-081-9211504-05-2460237

سبزی منڈی کوئٹہ میں مختلف زرعی اجناس کے یومیہ نرخ

جمعہ, 03 اپریل, 2020	نرخ نامہ آج دوپہر 12 بجے سے کل دوپہر 12 بجے تک نافذ رہے گا۔		
اجناس	اکائی	قیمت پرچون (درجہ اول)	قیمت پرچون (درجہ دوئم)
سیب (شین کلو)	کلو گرام	133	117
سیب ایرانی)	کلو گرام	190	160

3.2 Social Factors

Baluchistan's economy is mainly dominated by agriculture and livestock and apple is the most cultivated and produced fruit in Baluchistan. There is a large segment of the rural population whose livelihoods and dependent on apple value chain related activities.

The usual household usually contains of one bread earner who is providing financial support to the entire family. This unit will have a significant impact on the household incomes and improving livelihoods of the rural communities. Consequently, women are the most vulnerable to poverty and discrimination due to their socio-economic situation and they can be hardly approached. The unit should make special arrangements to offer job opportunities especially to youth and women within the local cultural norms.

3.3 Environmental Factors

Trees play a vital role in cleaning the world's ecosystem by removing carbon dioxide from the air and creating fresh oxygen. The apple industry however uses a large amount of water which is a major concern, particularly in water scarce areas. However the government is trying to mitigate this issue through the introduction of new variety of seeds, construction of dams and improving the efficiency of irrigations systems.

The unit will maintain the environmental safeguarding of its ecosystem, through sustaining the existing flora and fauna and not introducing any material or product that will affect or change them in a negative way. Additionally, the infrastructure and services that need to be developed and implemented will be planned in an environmental friendly way; where the introduction of proper water waste management practices will be an option that will be utilized and encouraged. The unit does not aim to upscale current primary production practices rather improve existing one, thus reducing post-harvest losses and creating value addition.

4. Pre-Feasibility study for the unit

This section will outline the process flow chart, procedure and preferable location along with the design and setup and quality control required for the establishment of the unit.

4.1 Process flow chart of compliant product grading and packing

4.2 Procedure

The business setup is proposed to be operated as a sole proprietorship as it involves less complications and costs in terms of setup and taxes. Location will play a key role to ensure freshness of the raw material and long shelf life of the product. It will also be important to

identify skilled labor force and trainings of the personnel. Proper marketing techniques, establishing business networks and linkage to markets will ensure success of establishing the unit.

4.3 Design and setup of the unit

Infrastructure should be available to properly lodge the required equipment. The physical layout, basic services, installations and equipment must be considered before setting up the unit. In addition, it is important to keep in mind that the infrastructure meets specific requirements required for processing of food items intended for human consumption. The design must ensure basic principles of industrial health and hygiene. In case of the cultural context the unit in order to promote gender equality should have segregated sections for women workers.

The working area should be properly ventilated and natural light should be provided as much as possible to facilitate workers performance. The floors must be of solid material and washable with proper drainage system. The unit must be equipped with proper areas to receive raw materials, storage of product and basic facilities required by the work force. These requirements are a must in order to guarantee that the apples quality is maintained and are fit for human consumption.

4.4 Quality control

The unit will follow and comply with the national or provincial technical regulations and/or with the requirements of relevant food safety certifications selected by the operator. In case national and provincial technical regulations are lacking and thereby they do not ensure the required product quality and safety, it is highly recommended to follow private certification standards and schemes. The design and the setup of the unit has to follow the requirements of these standards and accordingly the provided design and setup showcases a best practice and adjustments have to be made depending on the capacity as well as the resources of the operator. In case private certifications are somehow not reachable by the enterprise, the implementation of prerequisite programmes like Good Manufacturing Practices should be taken into consideration.

5. Required Features for the establishment of the unit

This section will identify the preferred and required features for the establishment of the unit.

5.1 Land and Infrastructure

Quetta is strategically the most suitable place for such a unit due to easy accessibility, existence of the necessary logistic facilities, human resources and operational business activities etc.

The space requirement for the proposed Apple Treatment Plant is estimated to be 25,000 square feet, considering various facilities including management office, production hall, storage, open space, etc. It is estimated that the prevailing lease rate is around Rs.1500 per square feet in the suburbs of Quetta city (Table 1). Civil works are divided into management building, factor field (fumigation chamber, processing hall, and warehouse) rest room and boundary wall. The cost of construction per ft2 is estimated to be Rs.1500 at the current market rate.

Cold storage is not included in the cost but it is highly recommended that the unit is established near cold storage facilities. Additional machinery including a forklift, reefer container and a truck for transportation might be purchased based on requirements of specific units. This feasibility study considers renting vehicles for the transportation of goods.

Table 1: Space requirement and building

Description	**Area (square feet)**	**Unit cost (Rs)**	**Total cost (million Rs.)**
Management building	1000	1500	1.50
Fumigation Chamber	1600	1500	2.40
Foundation for Machinery & building - processing hall	6000	1500	9.0
Warehouse	2000	1500	3.0
Boundary wall		1500000	1.50
Rest room	250	1500	0.375
Space requirement	25000	100	2.50
Total	25850		20.275

5.2 Required resources for operationalization

This section will outline the machinery, office equipment and furniture and fixtures requirements to set up the unit with price estimates.

Machinery

Description	**Total cost million (Rs.)**
Apple sorting, washing and waxing line	6.248
Transport apple processing line (Bhalwal to the destination)	0.2
GST @17% on total machinery cost	1.062
Grand total	7.51

* There are various options to procure the machinery but local manufacturer is given preference here due to the cost

The details of Apple processing line are given as table 2.

Table 2: Plant parts

S.No	**Type of Machinery**
1	Belt feeder
2	Roller feeder
3	Water tub
4	Washing
5	Water sucker (foamer)
6	Air dryer
7	Waxer
8	Air dryer 2
9	Sorting feeder
10	Packaging conveyer
11	Packing table
12	Panel board

Furniture and fixtures

Description	Quantity	Cost per unit (Rs.)	Total cost (Rs.)
Tables	6	25000	150000
Executive chairs	6	20000	120000
Visitor chairs	12	8000	96000
Air conditioners (1 ton split)	6	30000	180000
Steel Safe & other Fixtures	1	70000	70000
Air conditioners (2 ton split)	2	40000	80000
Total			534,000

Office equipment

Description	Quantity	Unit cost (Rs.)	Total cost (Rs.)
Laptop computer	1	80000	80000
Desktop computers	4	65000	260000
Computer printers	2	25000	50000
Telephone exchange	1	100000	100000
Telephones	10	5000	50000
Fax machine	1	35000	35000
Photocopier	1	150000	150000
Projector	1	100000	100000
Total			**825000**

5.3 Production Scope and Supply Chain

Proper supply chain helps to maintain product shelf-life and avoid quality degradation. With the help of apple processing line quality of apple fruit will be improved in the target

districts, thereby leading to productivity and less consumer rejection. The main success factors in supply chain of apple are consistent supply of quality and quantity of apples at the right place and for the right price.

Processing capacity of apple processing line with specification such as washing, drying, waxing, coloring & grid would be 2 ton per hour. The staff is supposed to be provided by business entity or firm. The unit will to provide employment to 24 people directly; however, seasonal semi-skilled daily wage labor will also be employed depending on the processing capacity of the unit.

5.4 Human Resources

To run the apple processing unit operations smoothly, details of required human resources along with number of employees and monthly salary are suggested as below:

Description	**No of employees**	**Monthly salary (Rs).**
Project Manager	1	120000
Quality Assurance Officer	1	90000
Assistant plant manager	1	90000
Skilled workers	3	75000
Semi-Skilled Workers	4	80000
Accounts and Admin Officer	1	40000
Guards	2	40000
Plant operator	1	30000
Receptionist	1	30000
Electrician	1	21000
Mechanic	1	21000
Driver	1	21000
Sweeper	1	18000
Total		**676000**

5.5 Sensitivity indicators

a) Attracting small holders (≤ 5 acres)

Small farmers constitute around 30-80 percent of all sized farms in different districts of Baluchistan (Agriculture census, 2010). In Quetta, Pishin, Killa Abdullah, Killa Saifullah

and Kalat small farm holders are 32%, 64%, 59%, 32% and 19% respectively (Bureau of Statistics, 2010). Small farmers are largely dependent on input dealers and commission agents (Arthis) for production and marketing credit, because they are capital scarce and many of them engulfed in debt trap. It will be difficult to attract small holders due to their reluctance to adopt new methods and technologies and short term oriented expectation of returns. This factor can be mitigated through awareness, education and training and tangible financial rewards.

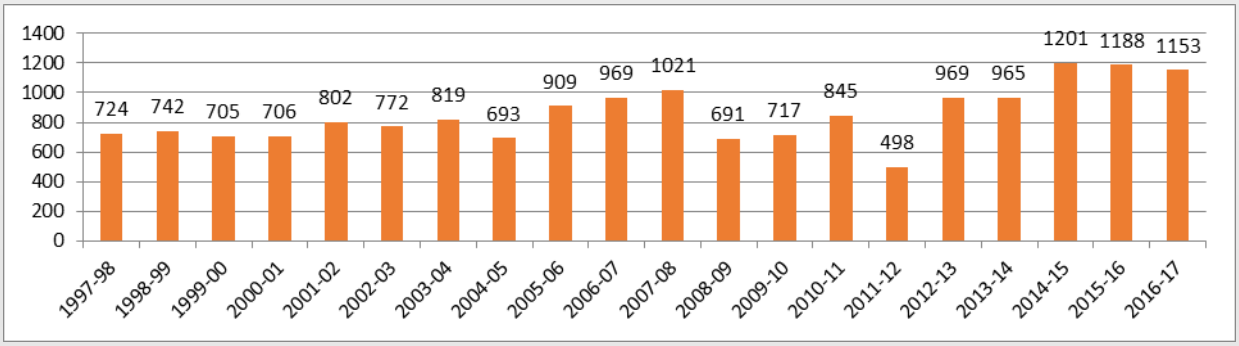
b) Suppliers

Baluchistan produces 576,376 tons of apples from an area of 87,171 hectares according to Agriculture Statistics Balochistan (2016-17). In order to ensure adequate supply such facilities can be established in apple producing districts like Quetta, Killa Saifullah and Kalat. This will also ensure the maximum supplies and the full utilization of the facility.

c) Price fluctuations

The price information given in the below given table shows the historical average apple prices in Quetta wholesale market. The average price per kilogram is around Rs. 30during the year 2015 to 2017 (Figure 2). This shows that the whole prices in Quetta market are pretty low, mainly due to lack of standardization and grading. However, the evidence shows that farmers can get higher prices for their apple provided the proper grading and standardization of the produce is done (Iqbal, 2016).

Figure 2: Wholesale prices of apple over time (1997-98- 2016-17) in Quetta market Rs/15 kg



Source: Economics and Marketing, Department of Agriculture Extension Baluchistan (1997-98 to 2016-17).

d) Maintaining standards

Currently the international standards are not met, due to which the exports of apple is not encouraging. Apple quality needs to be improved as per the requirements of the international apple market and to make a place in the international market. In this regard, fulfilling the World Trade Organization's (WTO), Sanitary and Phytosanitary standards (SPS) and Technical Barriers to Trade (TBT) measures are prerequisite for exports.

e) Exchange rate fluctuation

The exchange rate of Pakistani rupee has been stable for the last few months after a volatile period of over six months after the present government took over. Pakistani rupee was devalued against dollar to reduce the current account deficit through reducing the balance of trade deficit.

The volatile exchange rate affects the business community more than everyone, because of the uncertainty it exhibits. Kandilov (2008) revealed that exchange rate volatility has large negative effect on the agricultural trade between countries. The effect is much larger for developing countries exporters than the developed countries' exporters. But in Pakistan it is expected that after the downward adjust of Pakistan rupee against US dollar, the exchange rate will remain stable in near future and will be helpful to agricultural exports.

f) Increasing competition and other factors

One of the important reasons for failure to boost apple export from Pakistan has been its inability to supply the well processed, preserved, sorted, graded, waxed and properly packed apples as per the demand of the international market. Moreover, the freshness of our apples is not retained due to delay in transportation and lack of proper treatment, lack of knowledge on proper storage, which are among the most important requirements of the international market (SMEDA, 2014). Currently Pakistan is the net importer of apple due to illegal import of apple from countries such as Iran and Afghanistan, however, a good amount of potential exist to export Pakistani apple to Bangladesh, Sri Lanka, and UAE.

6. Project Cost

The total project including total capital cost and total working capital is as follows:

Project Cost	
Description	**Price (PKR)**
Land & Building	20,275,000
Machinery and equipment (including 17 %	

tax)	7,511,073
Office Equipment	825,000
Furniture and Fixtures	534,000
Factory Vehicle	2,500,000
Pre-operating costs	200,000
Total Capital Cost	**31,845,073**
Working Capital	
Raw Material Inventory	1,374,880
Upfront Insurance Payment	375,554
Cash	17,404,494
Total Working Capital	**19,154,927**
Total Project Cost	**51,000,000**

7. Financial Analysis

7.1 Projected Income Statement

Projected Income Statement					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
					Amount in (PKR)
Revenue	103,680,000	161,568,000	203,860,800	252,996,480	297,270,864
Cost of Goods Sold	84,557,568	131,674,187	166,057,641	205,384,070	241,011,155
Gross Profit	19,122,432	29,893,813	37,803,159	47,612,410	56,259,709
General administrative & selling expenses					
Administration Expense	3,110,400	4,847,040	6,115,824	7,589,894	8,918,126
Office Expense	311,040	484,704	611,582	758,989	891,813
Travelling Expense	1,244,160	1,938,816	2,446,330	3,035,958	3,567,250
Communication Expense	120,000	132,000	145,200	159,720	175,692
Office Vehicles Running Expense	350,000	350,000	350,000	350,000	350,000
Promotional Expense	1,036,800	1,615,680	2,038,608	2,529,965	2,972,709
Insurance Expense	375,554	337,998	300,443	262,888	225,332

Ammortization Expense	20,000	20,000	20,000	20,000	20,000
Professional fees	1,036,800	1,615,680	2,038,608	2,529,965	2,972,709
Depreciation Expense	1,387,007	1,387,007	1,387,007	1,387,007	1,387,007
Subtotal	8,991,761	12,728,926	15,453,602	18,624,386	21,480,638
Operating Income	10,130,671	17,164,888	22,349,556	28,988,024	34,779,071
Other income Gain / (loss) on sale of assets	2,160,000	2,772,000	3,484,800	4,312,440	5,007,222
Earnings Before Interest & Taxes	12,290,671	19,936,888	25,834,356	33,300,464	39,786,293
Interest Expense					
Earnings Before Tax	12,290,671	19,936,888	25,834,356	33,300,464	39,786,293
Tax	3,687,201	5,981,066	7,750,307	9,990,139	11,935,888
NET PROFIT/(LOSS) AFTER TAX	8,603,470	13,955,821	18,084,049	23,310,325	27,850,405

7.2 Projected Balance Sheet

Projected Balance Sheet						
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
						Amount in (PKR)
Assets						
Current Assets						
Cash & Bank	17,404,494	2,968,802	8,937,636	19,520,177	34,040,782	54,521,494
Accounts receivable	-	5,965,151	9,295,693	11,728,978	14,555,962	17,103,255
Finished goods inventory	-	21,139,392	27,633,699	34,605,986	42,694,521	49,579,159
Raw material Inventory	1,374,880	1,604,027	2,016,491	2,495,407	2,897,445	3,187,190
Pre-paid Insurance	375,554	337,998	300,443	262,888	225,332	187,777
Total Current Assets	19,154,927	32,015,369	48,183,962	68,613,435	94,414,043	124,578,874
Fixed Assets						
Land & Building	20,275,000	20,275,000	20,275,000	20,275,000	20,275,000	20,275,000
Machinery & Equipment	7,511,073	6,759,965	6,008,858	5,257,751	4,506,644	3,755,536
Furniture & Fixtures	534,000	480,600	427,200	373,800	320,400	267,000
Office Vehicles	2,500,000	2,000,000	1,500,000	1,000,000	500,000	0
Office Equipment	825,000	742,500	660,000	577,500	495,000	412,500
Total Fixed Assets	31,645,073	30,258,065	28,871,058	27,484,051	26,097,044	24,710,036
Intangible assets						
Pre-operation costs	200,000	180,000	160,000	140,000	120,000	100,000

Total Intangible Assets	200,000	180,000	160,000	140,000	120,000	100,000
Total Assets	51,000,000	62,453,435	77,215,020	96,237,486	120,631,086	149,388,910
Laibilities & Shareholders' Equity						
Currenct Liabilities						
Accounts Payable		2,849,965	3,655,729	4,594,145	5,677,421	6,584,840
Total Current Liabilities		2,849,965	3,655,729	4,594,145	5,677,421	6,584,840
Other Liabilities						
Deferred tax						
Long term debt						
Total Long Term Liabilities		-	-	-	-	-
Shareholders' Equity						
Paid-up capital	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000
Retained Earnings		8,603,470	22,559,291	40,643,341	63,953,665	91,804,070
Total Equity	51,000,000	59,603,470	73,559,291	91,643,341	114,953,665	142,804,070
Total Capital & Liabilities	51,000,000	62,453,435	77,215,020	96,237,486	120,631,086	149,388,910

7.3 Projected Cash Flow Statement

Projected Cash Flow Statement						
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
						Amount in (PKR)
Operating activities						
Net profit	-	8,603,470	13,955,821	18,084,049	23,310,325	27,850,405
Add: depreciation expesne	-	1,387,007	1,387,007	1,387,007	1,387,007	1,387,007
Amotization expesne	-	20,000	20,000	20,000	20,000	20,000
Accounts recievbale	-	(5,965,151)	(3,330,542)	(2,433,284)	(2,826,984)	(2,547,293)
Finished goods inventory	-	(21,139,392)	(6,494,307)	(6,972,287)	(8,088,535)	(6,884,637)
Raw material inventory	(1,374,880)	(229,147)	(412,464)	(478,917)	(402,038)	(289,745)
Advance insurance premium	(375,554)	37,555	37,555	37,555	37,555	37,555
Accounts payable	-	2,849,965	805,764	938,417	1,083,276	907,419
Other liabilities	-	-	-	-	-	-
Cash provided by operations	(1,750,434)	(14,435,692)	5,968,835	10,582,541	14,520,605	20,480,712
Financing activities						
Change in long term debt						
Change in short term debt						
Issuance of shares	51,000,000					
Purchase of (treasury) shares						
Cash by financing activities						

	51,000,000		-	-	-	-
Investing activities						
Capital expenditure Acquisitions	(31,845,073)					
Cash by investing activities	(31,845,073)	-	-	-	-	-
Net Cash	17,404,494	(14,435,692)	5,968,835	10,582,541	14,520,605	20,480,712
Cash balance brought forward	17,404,494	17,404,494	2,968,802	8,937,636	19,520,177	34,040,782
Cash available for appropriation	17,404,494	2,968,802	8,937,636	19,520,177	34,040,782	54,521,494
Owner's Withdrawals						
Cash carried forward	17,404,494	2,968,802	8,937,636	19,520,177	34,040,782	54,521,494

8. Key assumptions

8.1 Project Capacity Assumptions

Production Capacity	
Description	**Amount**
Maximum Capacity per hour (Kg's)	2000
Daily hours of operation	8
Days in Year	180
Capacity Year 1	60%
Capacity Year 2	70.0%
Capacity Year 3	80.0%
Capacity Year 4	90.0%
Capacity Year 5	95.00%

8.2 Cost of Goods Sold Assumption

Cost of Goods Sold Assumptions	
Description	**Calculation**
Cost of Apples from Farm per Kg	40
Packing Material Cost per Kg	15
Direct Labor Cost	4056000
Transportation Cost (% of revenue)	10%
Direct Electricity Cost (% of revenue)	2%
Direct Water Cost (% of revenue)	0.20%
Misc. factory expense (spare parts, repair, maintenance) % of production capacity	25.00%
Closing Stock as percentage of annual production	20%
Number of Month's salary paid in year	6

8.3 Revenue Assumptions

Revenue Assumptions	
Description	**Details**
Sale Price/ KG	100
Sale Price Growth Rate/ Year	10%
Wastage Price	5
Production (Year 1) @ 60% capacity utilization	1,728,000
Wastages as % of total production	25%
Wastages in KG's	432,000
Processed Apples Available for Sale in Year 1	1,296,000

8.4 Economic Assumptions

Economic Assumptions	
Description	**Annual % increase**
Electricity Price Growth Rate	10%
Gas Price Growth Rate	10%
Water Price Growth Rate	5%
Salary Growth Rate	10%
Packaging Cost Growth Rate	10%
Communications Cost Growth Rate	10%
Tax Rate	30%

8.5 Expense Assumptions

Expense Assumptions	
Description	**Details**
Administrative Expense (% of total revenue)	3%
Travelling Expense (% of administrative expense)	40%
Office Expense (% of administrative expense)	10%
Telephone and Internet Expense	120000
Office Vehicle Running Expense(% of vehicle cost)	14%
Professional Fee (Legal, Audit etc)	0.50%
Machinery & Equipment Insurance Rate	5%
Promotion Expense (% of revenue)	1%

8.6 Depreciation Expense Assumptions

Depreciation Expense Assumptions	
Depreciation method	Straight line
Machinery & Equipment	10%
Furniture & Fixtures	10%
Office Equipment	10%
Office Vehicle	20%
Amortization of pre operating costs	10%

8.7 Cash Flow Assumptions

Cash flow Assumptions	
Accounts Receivable Cycle (In Days)	30
Accounts Payable Cycle (In Days)	30
Credit Sales as % of total sales	70%
Credit Purchases as % of total purchases	50%

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