Feasibility study for apple juice and bottling unit

PAFAID

9th July, 2020

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Measurement Table

1 US Dollar	160.38 Pakistani Rupees
1 Square Yard	9 Square foot
1 Ton	1000 kilograms
1 Hectare	2.47105 Acres
1 Litre	1000 ml

ABBREVIATIONS

UNIDO	United Nations industrial development organization
TBT	Technical barriers to trade
WTO	World Trade Organization
SPS	Sanitary and phytosanitary standards
SMEDA	Small and Medium Enterprises Development Authority
PKR	Pakistan Rupee (Rs.)
kg	Kilogram
ml	Milliliter
UAE	United Arab Emirates
KM	Kilometer
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 any value addition and processing units in Baluchistan the farmers are forced to sell their produce at low prices and experience high post-harvest losses.

The purpose of the proposed apple juice and bottling unit is to manufacture consumer apple juice using locally produced apple in line with nationally acceptable standards. Currently, very meager amount of value addition (juice, jelly, jam etc.) related apple processing is done in Baluchistan. Apples used for juice making purposes are usually lower grade apples that are usually wasted or sold at very low prices due to non-availability of processing facilities.

This low grade apple constitutes a significant share of the total production and according to the focus group discussion conducted by UNIDO (2020), the ratio is around 20-30% of total production. These apples are very often sold at an extremely low price in bulk in Sindh and Punjab provinces for value addition. This unit will add value to these low grade apples which will increase economic value of the raw apples and also reduce postharvest losses. Local apple farmers will be able to benefit by getting a market for their lower grade fruits which do not have any value as table fruit. The huge amount of apple that is usually sold in sacks due to its small size or poor appearance could be used for value addition purpose by making juice. Major share of the juice factory output will be sold in the local and national markets and also exported. The unit will also provide employment opportunities to skilled and semi-skilled staff.

The proposed unit requires a total investment of approximately PKR. 150 million which includes capital cost of PKR 120 million and total working capital of 30 million. The production capacity of the unit is in the range of 3500 to 4,000 packs/bottles per hour if the plant is operational for 10 hours a day during 5 months of apple season. For the remaining 7 months of the off season the unit will operate at 2000 packs/bottles per hour if the plant is operational for 10 hours a day.

The unit can be established in any of the apple producing district including Quetta, Pishin, Kalat, Mastung, Killa Saifullah, Killah Abdullah, Ziarat while taking into consideration the infrastructure availability.

1. Introduction

Baluchistan 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 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 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 juice and bottling unit in Baluchistan can 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. Large quantities of low grade apple can be sourced at low prices with minimal transportation costs. The perishable nature of the fruit with high percentage of post-harvest losses and no value addition facilities present in Baluchistan makes it a lucrative investment. Apple juice is consumed in huge quantities throughout Pakistan and in the international market as well. However, when it comes national and international trade, apple juice from Pakistan needs to compete with large-scale producers, like China, Iran or Turkey, having modernized and well-equipped apple sector. According to Harvard Kennedy School Pakistan's total export

of apple juice in year 2017 was USD 2.17 million capturing only 0.10% of the global apple juice market. 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. 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, there is no apple juice and bottling unit in Baluchistan and most of the juice is manufactured in Punjab, Sindh and Khyber Pakhtunkhwa. In case of product packaging currently applied for processed 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 juice and bottling 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. Properly packaged apple juice will increase the demand for low grade apples and which will improve the livelihood of the rural 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 and high percentage of post-harvest losses is the absence of processing and packaging to ensure product compliance required to meet 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- Price of apples in Quetta fruit and vegetable market as of April 3, 2020Quetta Fruit and Vegetable Market Price List (April 3, 2020)

Variety	Quantity	Price	Price
		A Grade	B Grade
Shin Kulu Apple	kg	133	117
Irani Apple	kg	160	190

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.

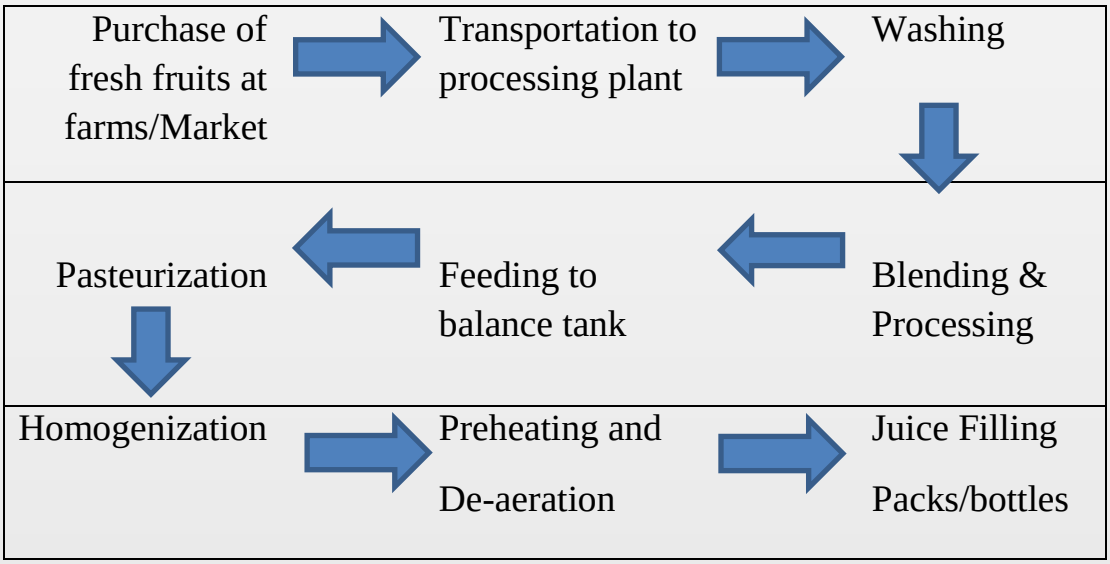
The unit will maintain the environmental safeguarding of its ecosystem, through sustaining the existing flora and fauna and not introducing any material or product that will affect or change them in a negative way. Additionally, the infrastructure and services that need to be developed and implemented 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



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 might offer the best possibility for such facility due to its strategic location for the apple value chain. It is suitable place for such investment due to easy accessibility, existence of the necessary logistic facilities, utilities, human resources and operational business activities.

The space requirement for the proposed apple juice and bottling unit 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 per ft^2 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 ft^2 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 and equipment 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 and has been included in the travelling expenses in the financing.

Table 1: Space requirement and building

Description	**Area (square feet)**	**Unit cost (Rs)**	**Total cost (million Rs.)**
Management building	1000	1500	1.50
Foundation for Machinery & building - processing hall	6000	1500	9.000
Warehouse	2000	1500	3.000
Boundary wall		1500000	1.500
Rest room	250	1500	0.375
Space requirement	25000	100	2.50
Total	25850		17.875

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.

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

Table 2: Apple processing line with accessories

S.No	Type of Machinery	Quantity	Cost Rs. (Million)
1	Bottling unit/Tetra pak Machines	1	20.00
2	Washing and pasteurization unit	1	40.185
3	Utility/Allied Machinery	1	5
4	Electrical panel and system	1	0.25
	Total		65.435

Details of the machinery including accessories, transportation and tax are given below in table 2.1.

Table 2.1: Machinery

Description	Quantity	Unit cost (million)	Total cost million (Rs.)
Apple processing line with bottling unit.(washing line and pasteurization unit) etc. as given in table 2	1	65.435	65.435
Tube well with accessories	1	2.50	2.50
Electric Generator	1	2	2
Transport of machinery (Karachi to the destination)	1	0.15	0.15
Total machinery cost without tax			**70.085**
GST @17% on total machinery cost			11.9145
Total machinery cost			81.99

* The machinery can be imported from Japan or Italy and the decision is to be made after consultation with independent experts keeping in view the resources, type of machinery and its compatibility to local conditions etc.

Table 2.2: 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			**696000**

Table 2.3: Office equipment and other accessories

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, raw apple will be processes into Juice in the target districts, thereby leading to reduction in postharvest losses and improvement in the economic condition of apple farmers especially small farmers. The apple processing line is the missing part in apple supply chain, which causes 20-30% of apple get wasted or either fed to animals or sold at very low prices.

Increased population growth, increase in disposable incomes of middle to high income families and increased penetration in newer smaller markets in peri-urban and rural areas have increased the demand for fruit based beverages. The fruit juice processing sector in Pakistan is quite large to meet the demand of its population of more than 200 million; an exponential growth has been recorded in the fruit processing industry of Pakistan over the past two decades. The product portfolio has also been diversified for ready to use drinks. Moreover, a shift in demand away from carbonated cola drinks to fruit based beverages has been seen over the last few years showing consumers increasing awareness and health consciousness (Government of Punjab, 2018).

The capacity of fruit juice manufacturing plants is defined by the capacity of the filling (packing) machines. The capacity of the processing unit can be increased by increasing the number of filling machines and the corresponding additions in the upstream processes to match the change in juice filling capacity. The machines selected have the capacities in the range 3500 to 4,000 250ml packs/bottles or 1000 litre per hour if the plant is operational for 10 hours per day. The required input of raw apples per hour to produce 1000 litre of juice is 2500 kg. With minor adjustments the plant can also be used to produce mango, guava and peach juice.

5.4 Human Resources

To run the apple juice and bottling 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
Cleaners	2	36000
Total		**694000**

The proposed unit will provide employment to 24 people directly, however, seasonal semi-skilled wage labor would also be required and their number depends on the operation hours of the plant. Additional specialists in marketing, branding and sales professionals could be recruited based on needs of the business.

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 Balochistan (Agriculture census, 2010). In Quetta, Pishin, Killa Abdullah, Killa Saifullah and Kalat small farm holders are 32%, 64%, 59%, 32% and 19% respectively of all the farms (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

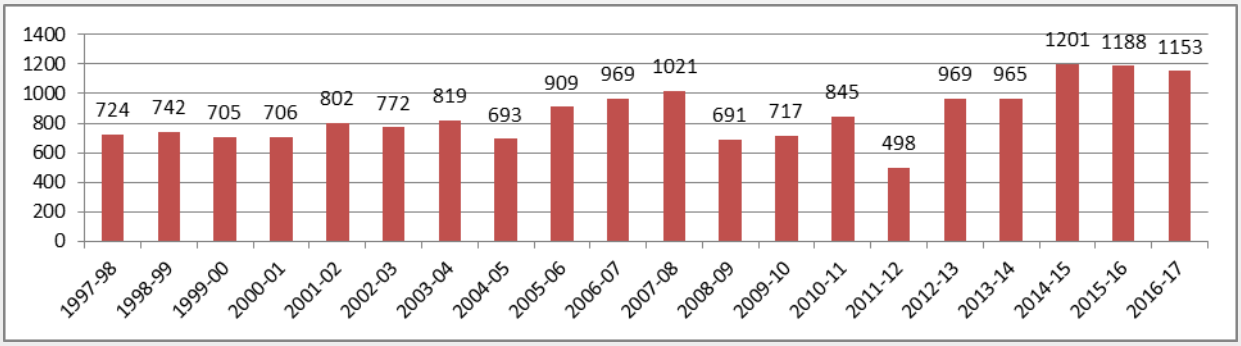
Baluchistan produces 576,376 tons of apples from an area of 87,171 hectares according to Agriculture Statistics Balochistan (2016-17). In order to ensure adequate supply such facilities can be established in apple producing districts like Quetta, Killa Saifullah and Kalat. This will also ensure the maximum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

well as with slight adjustments the facility can be used for processing of mango, guava and peach juices.

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. 30 during 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

Apple safety and quality need to be improved as per the requirements of the food safety standards on apple. In this regard, confirming with 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 when 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

At present there are around 100 companies manufacturing fruit juices in Pakistan. Among these there 30 to 40 with their own processing and filling facilities and the remaining are those juice manufacturers who do not have their own facilities but they use the facilities of other manufacturers to get their product packaged by paying service charges. This is also offer an interesting concept for the juice production in Balochistan and thereby its long-term viability shall be considered during the business model formulation. There are no juice manufacturers in Balochistan which enhances the scope for good earning opportunity by capturing the Balochistan market.

6. Project Cost

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

Project Cost	
Description	**Price (PKR)**
Land & Building	17,875,000
Machinery and equipment (including 17 % tax)	81,999,450
Office Equipment	825,000
Furniture and Fixtures	696,000
Factory Vehicle	3,500,000
Pre-operating costs (Licensing etc)	500,000
Total Capital Cost	**105,395,450**
Working Capital	
Raw Material Inventory	23,513,448
Upfront Insurance Payment	1,639,989.00
Cash	19,451,113
Total Working Capital	**44,604,550**
Total Project Cost	**150,000,000**

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	213,985,800	264,560,851	296,386,723	331,612,401	371,534,603
Cost of Goods Sold	148,056,123	180,623,661	199,722,573	220,613,021	244,087,513
Gross Profit	65,929,677	83,937,190	96,664,150	110,999,380	127,447,090
General administrative & selling expenses					
Administration Expense	6,419,574	7,936,826	8,891,602	9,948,372	11,146,038
Office Expense	641,957.40	793,682.55	889,160.17	994,837.20	1,114,603.81
Travelling Expense	2,567,829.60	3,174,730.21	3,556,640.67	3,979,348.81	4,458,415.24
Communication Expense	120,000	132,000	145,200	159,720	175,692
POL Office Vehicles	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Promotional Expense	2,139,858	2,645,609	2,963,867	3,316,124	3,715,346
Insurance Expense	1,639,989	1,475,990	1,311,991	1,147,992	983,993
Ammortization Expense	50,000	50,000	50,000	50,000	50,000

Professional fees	1,069,929	1,322,804	1,481,934	1,658,062	1,857,673
Gas for Office Heating	360,000	396,000	435,600	479,160	527,076
Depreciation Expense	852,100	852,100	852,100	852,100	852,100
Subtotal	17,061,237	19,979,741	21,778,095	23,785,716	26,080,938
Operating Income	48,868,440	63,957,449	74,886,055	87,213,664	101,366,153
Other income Gain / (loss) on sale of assets					
Earnings Before Interest & Taxes	48,868,440	63,957,449	74,886,055	87,213,664	101,366,153
Interest Expense					
Earnings Before Tax	48,868,440	63,957,449	74,886,055	87,213,664	101,366,153
Tax	14,660,532	19,187,235	22,465,817	26,164,099	30,409,846
NET PROFIT/(LOSS) AFTER TAX	34,207,908	44,770,214	52,420,239	61,049,565	70,956,307

7.2 Projected Balance Sheet

Projected Balance Sheet						
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Assets						
Current Assets						
Cash & Bank	19,451,113	31,279,789	78,783,467	133,715,804	196,454,619	271,328,577
Accounts receivable	-	4,993,002	6,173,087	6,915,690	7,737,623	8,669,141
Finished goods inventory	-	26,127,551	28,144,283	30,368,625	32,824,771	35,539,940
Raw material Inventory	23,513,448	26,647,840	30,200,053	34,225,783	38,788,151	40,727,559
Pre-paid Insurance	1,639,989	1,475,990	1,311,991	1,147,992	983,993	819,995
Total Current Assets	44,604,550	90,524,172	144,612,880	206,373,894	276,789,157	357,085,211
Fixed Assets						
Land & Building	17,875,000	17,875,000	17,875,000	17,875,000	17,875,000	17,875,000
Machinery & Equipment	81,999,450	73,799,505	65,599,560	57,399,615	49,199,670	40,999,725
Furniture & Fixtures	696,000	626,400	556,800	487,200	417,600	348,000
Office Vehicles	3,500,000	2,800,000	2,100,000	1,400,000	700,000	0
Office Equipment	825,000	742,500	660,000	577,500	495,000	412,500
Total Fixed Assets	104,895,450	95,843,405	86,791,360	77,739,315	68,687,270	59,635,225
Intangible assets						
Pre-operation costs	500,000	450,000	400,000	350,000	300,000	250,000

Total Intangible Assets	500,000	450,000	400,000	350,000	300,000	250,000
Total Assets	150,000,000	186,817,577	231,804,240	284,463,209	345,776,427	416,970,436
Laibilities & Shareholders' Equity						
Currenct Liabilities						
Accounts Payable		2,609,669	2,826,117	3,064,847	3,328,501	3,566,203
Total Current Liabilities		2,609,669	2,826,117	3,064,847	3,328,501	3,566,203
Other Liabilities						
Deferred tax						
Long term debt						
Total Long Term Liabilities		-	-	-	-	-
Shareholders' Equity						
Paid-up capital	150,000,000	150,000,000	150,000,000	150,000,000	150,000,000	150,000,000
Retained Earnings		34,207,908	78,978,122	131,398,361	192,447,926	263,404,233
Total Equity	150,000,000	184,207,908	228,978,122	281,398,361	342,447,926	413,404,233
Total Capital & Liabilities	150,000,000	186,817,577	231,804,240	284,463,209	345,776,427	416,970,436

7.3 Projected Cash Flow Statement

Projected Cash Flow Statement						
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Operating activities						
Net profit	-	34,207,908	44,770,214	52,420,239	61,049,565	70,956,307
Add: depreciation expense	-	9,052,045	9,052,045	9,052,045	9,052,045	9,052,045
Amotization expesne	-	50,000	50,000	50,000	50,000	50,000
Accounts recievbale	-	(4,993,002)	(1,180,085)	(742,604)	(821,932)	(931,518)
Finished goods inventory	-	(26,127,551)	(2,016,732)	(2,224,342)	(2,456,146)	(2,715,169)
Raw material inventory	(23,513,448)	(3,134,392)	(3,552,213)	(4,025,730)	(4,562,368)	(1,939,408)
Advance insurance premium	(1,639,989)	163,999	163,999	163,999	163,999	163,999
Accounts payable	-	2,609,669	216,448	238,730	263,654	237,702
Other liabilities	-	-	-	-	-	-
Cash provided by operations	(25,153,437)	11,828,676	47,503,678	54,932,337	62,738,815	74,873,959
Financing activities						
Change in long term debt						
Change in short term debt						
Issuance of shares	150,000,000					
Purchase of (treasury) shares						

Cash by financing activities	150,000,000		-	-	-	-
Investing activities						
Capital expenditure	(105,395,450)					
Acquisitions						
Cash by investing activities	(105,395,450)	-	-	-	-	-
Net Cash	19,451,113	11,828,676	47,503,678	54,932,337	62,738,815	74,873,959
Cash balance brought forward	19,451,113	19,451,113	31,279,789	78,783,467	133,715,804	196,454,619
Cash avaialble for appropriation	19,451,113	31,279,789	78,783,467	133,715,804	196,454,619	271,328,577
Owner's Withdrawals						
Cash carried forward	19,451,113	31,279,789	78,783,467	133,715,804	196,454,619	271,328,577

8. Key Assumptions

8.1 Project Capacity Assumptions

Production Capacity	
Description	Calculation
Maximum Capacity per hour (packs)	4000
Daily Hours	10
Working days in a month	30
Capacity Year 1	70%
Capacity Year 2	75.6%
Capacity Year 3	81.5%
Capacity Year 4	88.0%
Capacity Year 5	95.0%
Apple Season (months)	5.00
Off Season (months)	7.00
Capacity in off season months	50.0%

8.2 Cost of Goods Sold Assumption

Cost of Goods Sold Assumptions			
Description	**Calculation**		
Apple Season (per thousand liter of juice)			
	Kgs/Units	**PKR/Kg**	**Total Cost**
Raw Apple	2500	10	25000
Ascorbic Acid	0.2	500	100
Flavor	1.4	800	1120
Tetra Pak Paper 250 ml	4000	6.25	25000
Packaging Tray 250 ml (27 packs)	148	12	1778
Hot Melt for Straw (PKR/tray)	148	1	148
Shrink Wrap per tray	148	5	741
Straw	4000	0.25	1000
			54887
Wastage of raw materials			1098
Total cost of Raw Materials			**55984**
Off Season (per thousand liter of juice)			
	Kgs/Units	**PKR/Kg**	**Total Cost**
FCAJ (Fozen concentrated apple juice)	195	300	58500

Ascorbic Acid	0.2	500	100
Flavor	1.4	800	1120
Tetra Pak Paper 250 ml	4000	6.25	25000
Packaging Tray 250 ml (27 packs)	148	12	1778
Hot Melt for Straw (PKR/tray)	148	1	148
Shrink Wrap per tray	148	5	741
Straw	4000	0.25	1000
			88387
Wastage of raw materials			1768
Total cost of Raw Materials			**90154**
Other Manufacturing Costs (monthly basis):			
Direct Labor Cost			676,000
Electricity in apple season			200000
Electricity in off season			100000
Direct Water Cost			20,000
Misc factory exp (spare parts repair etc) % of production capacity			8%
Closing Stock as percentage of annual production			15%

8.3 Revenue Assumptions

Revenue Assumptions	
Description	Calculation
Apple Juice Sale Price 250ml	30
Sale Price Growth Rate/ Year	5%
Production (Year 1) (250ml apple juices)	8,400,000
Wastages as % of total raw material	2.0%
Wastages as % of total production	0.1%
Raw Material Inventory (Months)	2
Apple juices available for sale after wastages	8,391,600

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	5%
Communications Cost Growth Rate	10%
Apple Juice Price Growth Rate	5%
Raw Materials Price Growth Rate	5%
Tax Rate	30%
POL Price Growth	0%

8.5 Expense Assumptions

Expense Assumptions	
Administrative Expense (% of total revenue)	3%
Office Expense (% of administrative expense)	10%
Travelling Expense (% of administrative expense)	40%
Telephone and Internet Expense	120,000
POL Office vehicles	1,200,000
Professional Fee (Legal, Audit etc)	0.50%
Machinery & Equipment Insurance Rate	2%
Promotion Expense	1%
Gas	360,000

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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