Feasibility for Apple Jam Unit

PAFAID

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Contents

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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
1 Kg	1000 grams

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
Rs.	Pakistan Rupee
Kg	Kilogram
Ml	Milliliter
UAE	United Arab Emirates
KM	Kilometer
GST	Goods and services tax
US	United States
PAFAID	The Project for Agri-food and Agro-industry Development Assistance in Pakistan

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. Due to the non-availability of access to adequate capacity building services, value addition and processing units, the farmers in Baluchistan are often forced to sell their produce at low prices and experience high post-harvest losses.

The apple jam producing unit shall utilize the abundant supply of local fruit and will add value to it through modern techniques in processing and preservation. With the introduction of modern technology and packaging the product can also be preserved for many months which can be supplied to the local market as well as distant markets round the year. The purpose of the proposed apple jam manufacturing line is to manufacture apple jam from locally produced apple conforming with national and possibly international requirements. Currently, very meager amount of value addition (juice, jelly, jam etc.) related apple processing is done in Baluchistan. Apples used for jam 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 locally add value to these low grade apples which will increase economic value of the lower grade 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 jam. Major share of the jam 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. 40 million which includes capital cost of PKR 37.801 million and total working capital of 2.198 million. The production capacity of the unit is 210 tons per year if the plant is operational 8 hours a day and 5 days a week. Based on the calculations of this report the unit will have a net profit of 4.242 million in year 1 with a steady growth and achieving 17.967 million net profit in year 5. The unit will provide employment to 20 people directly and additional jobs may be created if the capacity is increased.

The proposed location of the unit is Quetta as it is the provincial capital and also has access to facilities like cold storages, transportation etc. The unit can also be established in any of

the other apple producing district including 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 high post-harvest losses, low value addition, minimal preservation and processing facilities, 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 table 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 and preservation sector in Baluchistan has a huge potential and can also be beneficial for the livelihoods of the rural communities.

1.1 Market analysis

An apple jam unit in Baluchistan can be beneficial in adding value to the huge quantity 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 jam is consumed in huge quantities throughout Pakistan and in the international market.

However, when it comes to national and international trade, apple jam from Pakistan needs to compete with large-scale producers, like China, Iran, Turkey or India, having modernized and well-equipped apple sector. According to Harvard Kennedy School Pakistan's total export of jam, jellies and marmalades in year 2017 was USD 5.82 million capturing only 0.19% of the global 3.3 billion USD jam market. For this reason, the introduction of new technologies can further improve the economy of scale and in turn efficiency of the value chain. As potential buyers, the apple jam can be also sourced to local hotels as well as national airline industry.

1.1.1 Current challenges for investment

The main challenges for such an investment in Baluchistan include lack of human and financial resources. 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. The creation of adequate packaging material based on local consumer preferences would also require a marketing analysis along with proper packaging design.

1.1.2 Status of industrial processing

As per the Agriculture Department there is some small scale or home based production of jam and jelly in the province. UNIDO under their Agriculture, Rural Development and Poverty Reduction Program also established a small-scale fruit processing unit in Kuchlak province. However there is no industrial level processing of apple in Baluchistan and most of the processing is taking place in the Sindh and Punjab provinces. In case of product packaging currently applied for processed apple products, 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 jam 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 processed into jam and properly packaged 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 or used for the hospitality industry, including national airlines. 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.

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, value addition 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 processing and marketing remains a huge issue when it comes to volume. Other neighboring countries already export a large volume of apples and apple products 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 processed apple products in the Europe, Middle East, Japan and North America. According to Harvard Kennedy School Pakistan's total export of jam, jellies and marmalades in year 2017 was USD 5.82 million capturing only 0.19% of the global 3.3 billion USD jam market.

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 are 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 along with the gender equitable technology.

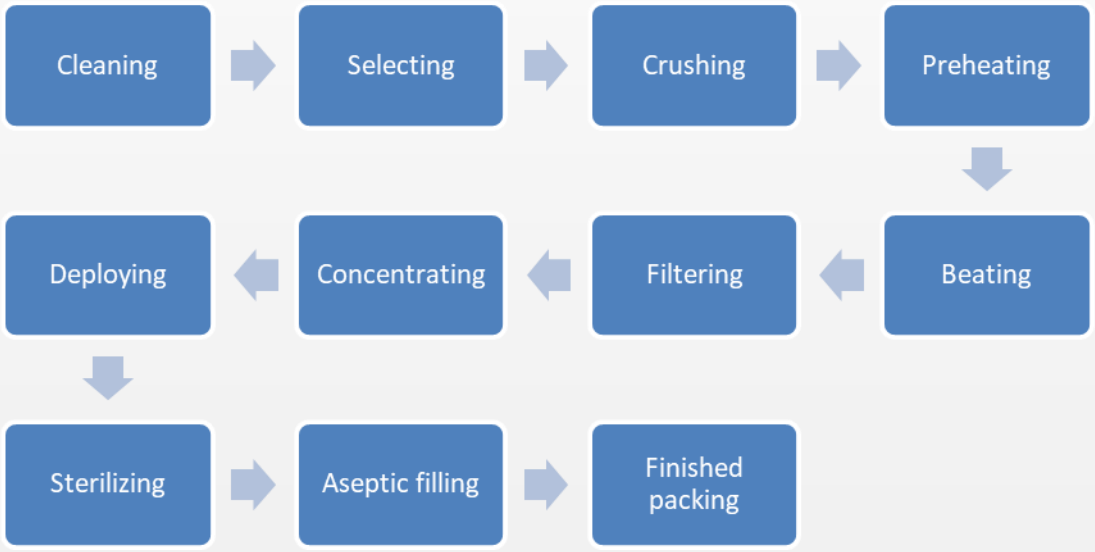
3.4 Impact of COVID-19 crisis on operation

Promoting adequate practices from food and labour safety aspect is essential to ensure business continuity and avoid potential disruption in value chains, leading to economic loss and food insecurity. For this reason, it is extremely important to follow the guidelines developed by FAO and WHO with the title COVID-19 and food safety: guidance for food businesses. As a first experience among industrialized nations, the implementation of adequate physical distancing among workers can lead to reduced output and lower capacity but on the other hand still ensures the safety and health of workers. This has to be strongly considered at this stage for the conduction of any feasibility study; however, as this pandemic shall be considered as a periodic challenge, the financial calculation of this feasibility study does not take into account. Overall, food business operators are strongly encouraged to apply the FAO/WHO guidance and also include them in their business continuity plan for mitigation of future risk.

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. The further shorten the value chain, enterprises undertaking fresh produce grading could also perform this value adding activity.

4.1 Process flow chart



4.2 Additional factors

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. The location of the unit should be within proximity to the city and have access to basic facilities like water, electricity, proper road network as well as be accessible to workers. It will also be important to identify skilled labor force and trainings of the personnel based on the capacity building framework planned to be developed as part of "The Project on Agri-Food and Agro-Industry Development Assistance in Pakistan" (PAFAID) initiative. 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 product 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 demand for product, easy accessibility, existence of the necessary logistic facilities, utilities, human resources and operational business activities.

The space requirement for the proposed apple jam unit is estimated to be 5000 square feet with covered area of 3000 square feet, considering various facilities including management office, production hall, storage, open space etc. It is estimated that the prevailing lease rate per ft2 is around Rs. 1500 per square feet in the suburbs of Quetta city. Civil works are divided into management building, warehouse, rest room and boundary wall. The cost of construction per ft2 is estimated to be Rs. 1500 at the current market rate. Details of space requirement and cost related to land and building are given in table 1.

Table 1: Space requirement and building

Description	Area (square feet)	Unit cost (Rs)	Total cost (million Rs.)
Management building	500	1500	0.75
Foundation for Machinery & building processing hall	1000	1500	1.5
Warehouse	1000	1500	1.5
Boundary wall		250000	0.25
Rest room	500	1500	0.75
Space requirement	5000	1500	7.5
Total			**12.25**

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	Pulp machine	1	3
2	Slicing machine	1	0.6
3	Juice extractor	1	2.4
4	Steam jacketed Kettle	1	0.3
5	Mixer/Grinder	1	0.3
6	Bottle washing and filling machine	1	2.4
7	Baby boiler	1	1.5
8	Cap stealing machine	1	1.8
9	Stirrers, SS utensils, Burner, Weighing scales, Hand gloves		0.3
10	Knives, tools, material handling equipment		0.12
11	Testing equipment		0.3
	Total amount PKR (Million)		**13.02**

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

2.1 Machinery

Description	**Quantity**	**Unit cost (million)**	**Total cost million (Rs.)**
Apple Jam production unit other accessories as given in table 2	1	13.02	13.02
Tube well with accessories	1	2.50	2.50
Electric Generator	1	2	2
Total machinery cost			17.52
GST @17% on total machinery cost			2.9784
Transport apple Jam production unit (Karachi to the destination)	1	0.15	0.15
Total machinery cost			**20.6484**

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.

2.2 Furniture and fixtures

Description	**Quantity**	**Cost per unit (Rs.)**	**Total cost (Rs.)**
Tables	3	25000	75000
Executive chairs	3	20000	60000
Visitor chairs	6	8000	48000
Air conditioners (1 ton split)	2	45000	90000
Steel Safe & other Fixtures	1	70000	70000
Air conditioners (2 ton split)	1	80000	80000
Total			**423000**

2.3 Office equipment and other accessories

Description	Quantity	Unit cost (Rs.)	Total cost (Rs.)
Laptop computer	1	80000	80000
Desktop computers	1	65000	65000
Computer printers	1	25000	25000
Telephones	5	5000	25000
Fax machine	1	35000	35000
Photocopier	1	150000	150000
Projector	1	100000	100000
Total			**480000**

5.3 Production Scope and Supply Chain

Balochistan produces more than 500 thousand tons of apples, the major share is consumed in fresh form and very meager amount of value added products in the form of apple jam, jelly, or marmalade are existing in Balochistan. For the jam making purpose, the Shin Kulu or Golden Delicious variety of apple is preferred. Tehsil Mangocher in Kalat, Gulistan in Killa Abdullah and Hurramzai in Pishin have the highest proportion of Shin Kulu/Golden Delicious apple production.

The jam production unit will use this apple, thus will directly add value to the raw apple. The establishment of jam production unit will thus contribute towards reducing postharvest losses and increasing the economic value of produce. Major share of the jam factory output will be sold in the local and national markets and also exported. Moreover, 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 the products like fruit jam.

5.4 Human Resources

To run the apple jam 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).	Total Monthly salary (Rs).
Project Manager	1	120000	120000
Quality Assurance Officer	1	90000	90000
Skilled workers	5	40000	200000
Semi-Skilled Workers	5	25000	125000
Accounts and Admin Officer	1	40000	40000
Guards	2	20000	40000
Receptionist	1	30000	30000
Electrician	1	21000	21000
Mechanic	1	25000	25000
Driver	1	21000	21000
Cleaner	1	18000	18000
Total			**730000**

The proposed unit will provide employment to 20 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)

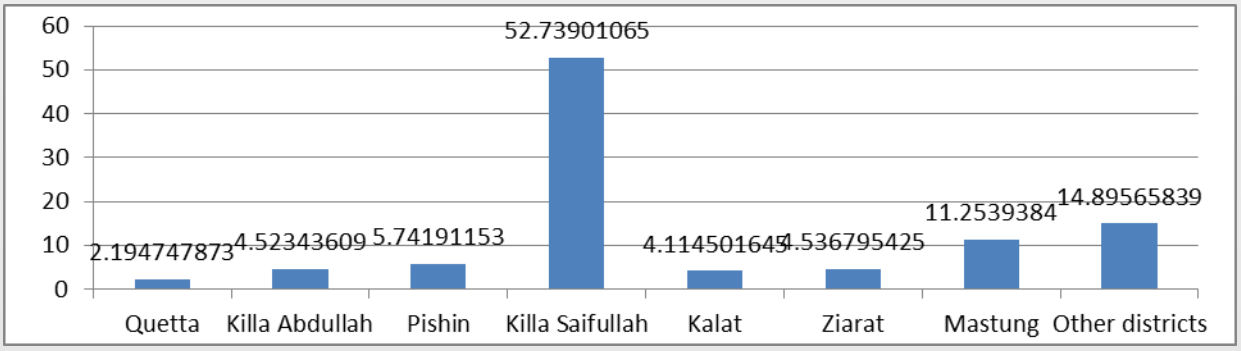
Small farmers constitute around 30-80 percent of all sized farms in different districts of Balochistan (Agriculture census, 2010). In Quetta, Pishin, Killa Abdullah, Killa Saifullah and Kalat small farm holders are 32%, 64%, 59%, 32% and 19% respectively (Bureau of Statistics, 2010). Small farmers are 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. This limits their choice of selling their produce on the

prices and market of their choice. Moreover, the high post-harvest losses and lack of processing causes 20-30% apple (small sized or injured fruit) is wasted that further depresses their profit margins. This project will build apple jam production facilities near the production areas to enable small farmers particularly to get their low quality apple processed into value added products.

b) Suppliers

The necessary raw materials include fruits, sugar, pectin, additives, preservatives, food colors etc. The packaging consumables include plastic jars, pouches, labels, cardboard boxes for outer packing and adhesive tapes. The raw apple will be acquired locally as Balochistan produces 576,376 tons of apples from an area of 87171 hectares (Figure 3 & 4). In order to ensure the farmers get the benefits of the apple jam production facility, the facility will be provided at all district headquarters of the main apple producing districts and their share in apple production is shown below as Figure 2. This will also ensure the maximum supplies and the full utilization of the facility and to enable apple producers to add value to their apple and export that in the form of apple jam. It would also help enhance the capacity of local farmers and others to turn into successful entrepreneurs.

Figure 2: Percentage share of different districts in apple production in Balochistan



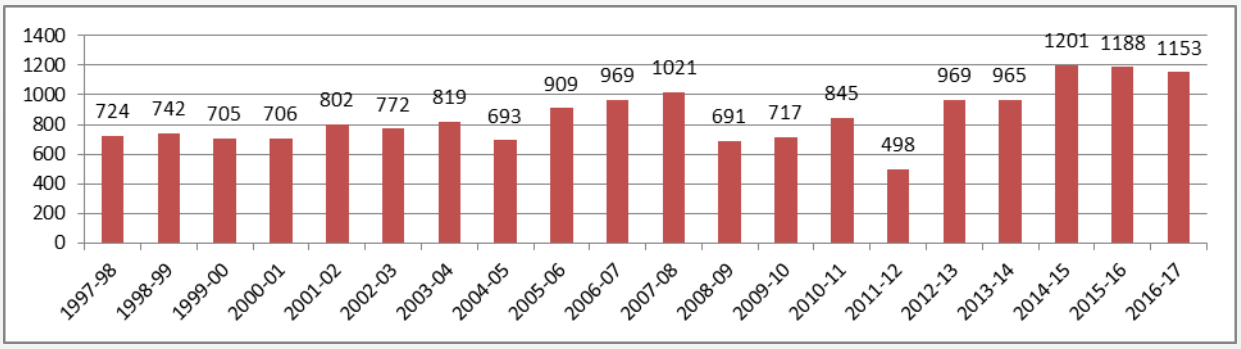
Source: Agriculture Statistics Balochistan (2017-18)

c) Price fluctuations

The price information given in the table below shows the historical average apple prices in Quetta wholesale market. The average price per kilogram is around 60 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 value adding facilities and its disposal in raw form only. Figure 1 shows that raw apple is produced in bulk and can be attained easily from the local market at

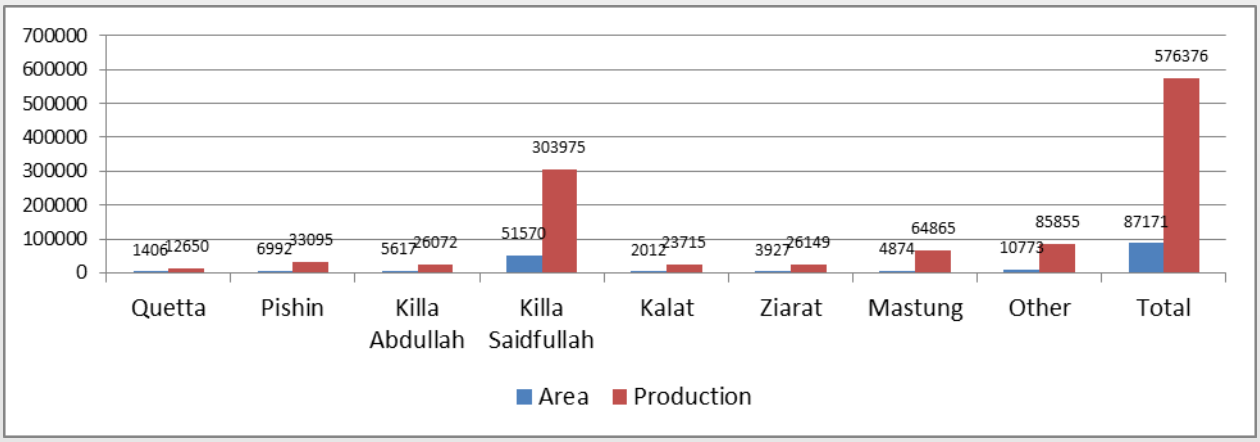
reasonable prices. As compared to raw apple prices (table 1), the prices of jam does not fluctuate that much and are generally stable, that can give a breadth to apple producers and will provide an additional certain source of cash.

Figure 3: Wholesale prices of apple over time (1997-98- 2016-17) in Quetta market Rs/15 kg



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

Figure 4: Apple area and production in Balochsitan (2016-17)



Source: Agriculture Statistics Balochistan (2016-17)

d) Maintaining standards

Apple jam quality needs maintained as per the requirements of the international apple market and to make a place in the international market where the competition is pretty tough. In this regard, fulfilling the World Trade Organization's (WTO), Sanitary and Phytosanitary standards (SPS) 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 many companies manufacturing fruit jams in Pakistan. There are no industrial level jam 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	7,500,000
Building & Infrastructure	4,750,000
Machinery	20,648,400
Factory Vehicle	3,500,000
Furniture and Fixtures	423,000
Office Equipment	480,000
Pre-operating costs (Licensing etc.)	500,000
Total Capital Cost	**37,801,400**
Working Capital	

Raw Material Inventory	366,947
Upfront Insurance Payment	492,568.00
Cash	1,339,085
Total Working Capital	**2,198,600**
Total Project Cost	**40,000,000**

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	39,650,310	51,921,727	61,645,050	73,189,248	86,895,315
Cost of Goods Sold	30,346,075	37,926,885	43,308,766	49,597,259	56,951,259
Gross Profit	9,304,235	13,994,843	18,336,284	23,591,989	29,944,056
General administrative & selling expenses					
Administration Expense	396,503.10	519,217.27	616,450.50	731,892.48	868,953.15
Office Expense	39,650.31	51,921.73	61,645.05	73,189.25	86,895.31
Travelling Expense	19,825.16	25,960.86	30,822.52	36,594.62	43,447.66
Communication Expense	60,000	66,000	72,600	79,860	87,846
POL Office Vehicles	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Promotional Expense	396,503	519,217	616,450	731,892	868,953
Insurance Expense	492,568	436,311	380,054	323,798	267,541
Ammortization Expense	100,000	100,000	100,000	100,000	100,000

Professional fees	39,650	51,922	61,645	73,189	86,895
Gas for Office Heating	360,000	396,000	435,600	479,160	527,076
Depreciation Expense	138,300	138,300	138,300	138,300	138,300
Subtotal	3,243,000	3,504,850	3,713,568	3,967,876	4,275,907
Operating Income	6,061,235	10,489,993	14,622,716	19,624,113	25,668,149
Other income Gain / (loss) on sale of assets					
Earnings Before Interest & Taxes	6,061,235	10,489,993	14,622,716	19,624,113	25,668,149
Interest Expense					
Earnings Before Tax	6,061,235	10,489,993	14,622,716	19,624,113	25,668,149
Tax	1,818,370	3,146,998	4,386,815	5,887,234	7,700,445
NET PROFIT/(LOSS) AFTER TAX	4,242,864	7,342,995	10,235,901	13,736,879	17,967,704

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	1,339,085	5,537,182	14,898,351	27,231,102	42,875,018	62,527,801
Accounts receivable	-	2,312,935	3,028,767	3,595,961	4,269,373	5,068,893
Finished goods inventory	-	3,371,786	3,839,455	4,385,479	5,023,531	5,769,747
Raw material Inventory	366,947	396,059	470,229	558,288	662,838	729,121
Pre-paid Insurance	492,568	436,311	380,054	323,798	267,541	211,284
Total Current Assets	2,198,600	12,054,273	22,616,856	36,094,628	53,098,301	74,306,847
Fixed Assets						
Land	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000
Building & Infrastructure	4,750,000	4,702,000	4,654,000	4,606,000	4,558,000	4,510,000
Machinery & Equipment	20,648,400	18,583,560	16,518,720	14,453,880	12,389,040	10,324,200
Furniture & Fixtures	423,000	380,700	338,400	296,100	253,800	211,500
Factory Vehicles	3,500,000	2,800,000	2,100,000	1,400,000	700,000	0
Office Equipment	480,000	432,000	384,000	336,000	288,000	240,000
Total Fixed Assets	37,301,400	34,398,260	31,495,120	28,591,980	25,688,840	22,785,700

Intangible assets						
Pre-operation costs	500,000	400,000	300,000	200,000	100,000	0
Total Intangible Assets	500,000	400,000	300,000	200,000	100,000	0
Total Assets	40,000,000	46,852,533	54,411,976	64,886,608	78,887,141	97,092,547
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	40,000,000	40,000,000	40,000,000	40,000,000	40,000,000	40,000,000
Retained Earnings		4,242,864	11,585,859	21,821,760	35,558,640	53,526,344
Total Equity	40,000,000	44,242,864	51,585,859	61,821,760	75,558,640	93,526,344
Total Capital & Liabilities	40,000,000	46,852,533	54,411,976	64,886,608	78,887,141	97,092,547

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	-	4,242,864	7,342,995	10,235,901	13,736,879	17,967,704
Add: depreciation expense	-	2,903,140	2,903,140	2,903,140	2,903,140	2,903,140
Amortization expesne	-	100,000	100,000	100,000	100,000	100,000
Accounts recievbale	-	(2,312,935)	(715,833)	(567,194)	(673,412)	(799,521)
Finished goods inventory	-	(3,371,786)	(467,669)	(546,024)	(638,052)	(746,216)
Raw material inventory	(366,947)	(29,112)	(74,170)	(88,059)	(104,550)	(66,284)
Advance insurance premium	(492,568)	56,257	56,257	56,257	56,257	56,257
Accounts payable	-	2,609,669	216,448	238,730	263,654	237,702
Other liabilities	-	-	-	-	-	-
Cash provided by operations	(859,515)	4,198,097	9,361,169	12,332,752	15,643,916	19,652,782
Financing activities						
Change in long term debt						
Change in short term debt						
Issuance of shares	40,000,000					
Purchase of (treasury) shares						
Cash by financing activities	40,000,000		-	-	-	-

Investing activities						
Capital expenditure	(37,801,400)					
Acquisitions						
Cash by investing activities	(37,801,400)	-	-	-	-	-
Net Cash	1,339,085	4,198,097	9,361,169	12,332,752	15,643,916	19,652,782
Cash balance brought forward	1,339,085	1,339,085	5,537,182	14,898,351	27,231,102	42,875,018
Cash avaialble for appropriation	1,339,085	5,537,182	14,898,351	27,231,102	42,875,018	62,527,801
Owner's Withdrawals						
Cash carried forward	1,339,085	5,537,182	14,898,351	27,231,102	42,875,018	62,527,801

8. Key assumptions

8.1 Project Capacity Assumptions

Production Capacity	
Description	**Calculation**
Maximum Capacity Annual (tons)	210
Working days in a week	5
Weeks in a year	52
Capacity Year 1	70%
Capacity Year 2	76%
Capacity Year 3	82%
Capacity Year 4	88%
Capacity Year 5	95%

8.2 Cost of Goods Sold Assumption

Cost of Goods Sold Assumptions			
Description	**Calculation**		
Apple Jam (per 27 bottles / 500 gram each)			
	grams/units	**Rs. per gram**	**Total Cost**
Raw Apple	6750	0.06	405
White Sugar	3375	0.08	270
Brown Sugar	337.5	0.12	40.5
Pectin	135	5	675
Water	2700	0.015	40.5
Bottle	27	10	270
Packaging Tray (27 bottles)	1	12	12
Shrink Wrap per tray	1	5	5
			1718
Wastage of raw materials			34.36
Total cost of Raw Materials			1752.36
Other Manufacturing Costs (annual basis):			
Direct Labor Cost			8760000

Electricity			2400000
Direct Water Cost			240000
Misc. factory exp. (spare parts repair etc.) % of production capacity			20%
Closing Stock as percentage of annual production			10%

8.3 Revenue Assumptions

Revenue Assumptions	
Description	**Calculation**
Sale Price per 500mg jar	150
Wastages as % of total raw material	2.0%
Wastages as % of total production	0.1%
Sale Price Growth Rate/ Year	10%
Raw Material Inventory (in days)	5

8.4 Economic Assumptions

Economic Assumptions	
Description	**Annual % increase**
Electricity Price Growth Rate	10%
Water Price Growth Rate	10%
Salary Growth Rate	10%
Feed cost Growth Rate	10%
Packaging Cost Growth Rate	10%
Communications Cost Growth Rate	10%
Selling price growth rate	10%
Materials Cost Growth Rate	10%
Tax Rate	30%

8.5 Expense Assumptions

Expense Assumptions	
Administrative Expense (% of total revenue)	1%
Office Expense (% of administrative expense)	10%
Travelling Expense (% of administrative expense)	5%
Salaries	16,644,000
Telephone and Internet Expense	60,000
Professional Fee (Legal, Audit etc)	0.10%
Machinery & Equipment Insurance Rate	2%
Gas for heating	360,000
POL Expense	1,200,000
Promotion Expense	1.0%

8.6 Depreciation Expense Assumptions

Depreciation Expense Assumptions	
Depreciation method	Straight line
Machinery & Equipment	10%
Furniture & Fixtures	10%
Office Equipment	10%
Building & Infrastructure	10%
Ammortization of pre opperating costs	20%
Factory Vehicle	20%

8.7 Cash Flow Assumptions

Cash flow Assumptions	
Accounts Recievable Cycle (In Days)	30
Accounts Payable Cycle (In Days)	15
Credit Sales as % of total sales	70%
Credit Purchases as % of total purchases	50%

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