In the name of Allah

Pre-feasibility studies

Project Name:

Production of Fruit Juice from concentrate

Project Owner: Mr. Naser Khatamiyan

Advisor of the project: Zahra Badoei

Project address: Khuzestan, Andimeshk Industrial Estate No.2

Date of P.F.S: February , 2021

Summary of pre-feasibility plan

General Specification			
Name of The Project	Production of fruit juice from concentrate		
Project Capacity	fruit juice from concentrate:2000 tons		
Personnel Number	16 persons		
Working Days	250 days		
Product Usage	Food and Beverage		
Marketing			
Product Global Price	923 Euro/ton		
Domestic Demand	1.09 million tons		
Domestic Production	1.11million tons		
Import	2044 tons		
Export	16.8 thousand tons		
Technical Study			
Land Area	6261 m ²		
Building Area	2244 m ²		
Main Raw Materials	citrus concentrate, sugar, packing materials		
Supplying Place of Raw Materials	Domestic		
Power Requirement	125 KW		
Water Requirement	5000 m ³		
Fuel Requirement	200,000 m ³ gas		
Economical & Financial Study			
Fixed Investment Cost	111,161.8 million Rails \cong 0.450 million Euro		
Working Capital	44,379.75 million Rails $\cong 0.180$ million Euro		
Total Investment Cost	155,541.55 million Rails \cong 0.630 million Euro		
Annual Sale	336,000.0 million Rails≅ 1.36 million Euro		
Net Present Value(NPV)	106,127.77 million Rails \cong 0.43 million Euro		
Break Even Point(BEP)	34.45%		
Internal Rate of Return(IRR)	33.92%		
Investment Return Period	4.4 years		
Investment Sources Ratio:			
Equity:21%	33,041.55 million Rails \cong 0.134 million Euro		
Finance: 79%	122,500 million Rails \cong 0.496 million Euro		

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Introduction:

In determining post-World War II economic development strategies, most countries chose the strategy of industrialization, citing the added value of the sector as a reason. That is, technological development based on knowledge and industrialization is responsible for modern economic development in countries, not traditional industries. Despite all the technological developments, the most advanced industrialized countries (USA, Japan and EU) consider the development of the agricultural sector not only as a complement to the industrial sector and the application of industry to agriculture as a result of increasing productivity in the sector but also consider the importance of food production in relation to their national security.

Because of using agricultural products as raw materials, processing industries can be a good case in making better use of these products. Many agricultural products are not produced or consumed at the same time, their Production or harvesting is usually done in a specific short time, but their consumption happens later on (for a long time). processing industries can preserve products in a way that they can be consumed throughout the year.

Creating and expanding processing industries has some economic effects, such as creating added value, employment, foreign exchange income as well as greater use of agricultural products. Thereby, this will prevent product loss juice are among the products processing industries that have considerable industrial history in Iran especially from the 60's and 70's onward. Companies such as "Marghab Dasht" (yek o yek) and "Takdaneh" are among the pioneers of this industry in the late 60s.

Khuzestan province has the following features in terms of cultivation and production of horticultural crops. They are specified in the following table and graph .

(2020)					
title	The Area under cultivation (thousand hectare)	The amount of production (thousand tons)	The Area under cultivation relative to the country (percentage)	The Amount of production relative to the country (percentage)	
	horticultural crops	horticultural crops	horticultural crops	horticultural crops	
Country	2,953.9	23,459.5	-	-	
Khuzestan province	61.7	383	2.1	1.6	
the Rank of Khuzestan in the country	18	22	-	-	

the Area under cultivation and Khuzestan capacity and rank in production of the horticultural crops (2020)

References: Agricultural Statistics Bulletin, Volume I and III, Ministry of Jihad Agriculture, 2020

Percentage of the area under cultivation and the percentage of Khuzestan production in horticultural crops (2020)



Therefore, according to the statistics, figures, and the above table, it can be said that Khuzestan province it stands in middle among other provinces in terms of horticultural crops. Also due to climate and fertile land, Iran has considerable varieties of fruits and citrus which are used as fresh fruits and producing of fruit juice also yield high value added. Additionally, they meet domestic demands and the country obtains considerable income and foreign currency through their export. Khuzestan province due to 4.7 million population, warm weather, popularity of healthy and cold beverages, also neighborhood with Persian gulf coasts' countries and export ports and terminals has a suitable location to establish a juice factory. Therefore, Mr. Khatamian has established a juice factory in Andimeshk industrial estate.

Part of the factory's operations, such as excavation, earth filling and landscaping, have been carried out by the company (15% physical progress) . in order to be completed the company requires funding to purchase machineries ,equipment and the raw materials. The project is very favorable in terms of access to raw materials, communication infrastructures and access to national and foreign markets. It should be noted that if the investor wishes to import and supply up-to-date machineries with advanced technology, it will be welcomed.







1.Product introduction:

The purpose of the present project is to produce juice from a concentrate with a capacity of 500 tons.

Fruit concentrate is one of the products in the processing of fruits and that is a form of substance they eliminates most of its main constituents or solvents. Concentrates are usually formed by taking out the water or suspension, such as taking the water in the juice and changing it into a powder or extract. The benefit of concentrate production is that by eliminating water, the weight of the nutrient is reduced and therefore it easier and cheaper to transport, plus when it is consumed the concentrate is easily returned to its original state by adding solvents (usually water). In this method, the essential oils or extracts actually made from the fruit, and by mixing these essential oils with sugar and water, they produce a variety of juices.



1.1. Product name and ISIC code

ISIC is the most common classification and categorization of economic activities. ISIC classification is defined as: classification and categorization of the international standard industrial classification of all economic activities. This classification is allocated to one of the 2, 4, and 10 digit codes based on the type of industry and product. ISIC code for citrus juice produced from concentrate are given in the table below

1513412469	ton
1513412528	ton
1513512470	ton
1513512471	ton
1513512476	ton
1513512478	ton
1513512485	ton
1513512529	ton
1513512472	Ton
	1513412469 1513412528 1513512470 1513512471 1513512476 1513512478 1513512485 1513512529 1513512472

Source: organization of Industry, mine and trade

1.2. Customs tariff code

Based on the export and import regulation of Islamic republic of Iran the custom tariff for citrus juice are as follows:

Heading subheading No.	Description		
2009	Fruit juices (including grape must) and vegetable juices, unfermented and not containing added spirit, whether or not containing added sugar or other sweetening matter.		
20091200	Orange juice Not frozen, of a Brix value not exceeding 20		
20091900	Other		
20093100	Juices of any other single citrus fruit of a Brix value not exceeding 20		
20094900	Other		
20097100	Apple juice of a Brix value not exceeding 20		
20097900	Other		
20092100	Grapefruir juice of a Brix value not exceeding 20		
20099000	Mixtures of juices		

Source : export-import regulations (2020)

1.3. Import and export products conditions

Given the conditions for product import and export in Islamic republic of Iran, conditions and tariffs for import and export of the citrus juice are as follows:

Heading Subheading No.	Description	SUQ	Import duty
	Fruit juices (including grape must) and vegetable juices,		
2009	unfermented and not containing added spirit, whether or		-
	not containing added sugar or other sweetening matter.		
20091200	Orange juice Not frozen, of a Brix value not exceeding 20	kg	55
20091900	Other	kg	32
20093100	Juices of any other single citrus fruit of a Brix value not exceeding 20	kg	55
20094900	Other	kg	
20097100	20097100 Apple juice of a Brix value not exceeding 20		55
20097900	Other	kg	55
20092100	20092100 Grapefruir juice of a Brix value not exceeding 20		55
20099000	Mixtures of juices	kg	55

Source : export-import regulations (2020)

Import terms:

1. - The entry is subject to the observance of Article 16 of the Low on Foodstuffs and Beverages approved in 1967.

2. - The importation of products of subheading 20091200, 20092100 & 20093100 with The Previous authorization of Ministry of Agriculture-Jahad

1.4. Review and presentation of standard (national or international)

- national Standard

Number	Title					
16748	Fruit juice concentrate- energy consumption criteria in production process					
5180	Fruit juices and derived products Determination of Lactic acid, total, by spectrophotometric method					
5181	Fruit juices and derived products - determination Of L- and D- lactic acids , by enzymatic method	Iran				
6332	Microbiology of Concentrated fruit and vegetable juices- Specifications and test methods	Iran				

Source: Institute of Standards and Industrial Research of Iran

International Standard

No.	Topic of standard	Organization that assigned the abbreviation	Number of standard
2	CODEX GENERAL STANDARD	CAC	247-2005
Z	FOR FRUIT JUICES AND NECTARS	CAC	247-2005

1.5. Review and provide information about domestic production prices and global price of the product

The global price of concentrate juice on the world markets is around 923 Euro per ton. In Iran, this price was variable and ranged 150-180 million Rials per ton.

1.6. Explaining the usage and application of the product in the domestic and foreign markets

Most common use of fruit juices is as beverage which is increasing. Pleasant taste and vitamins are the main reasons of their use especially among children, the youth, the elderly, and the patients. Fruit juice is literally popular as a non-alcoholic and uplifting drink across the world. Considering that fruits are seasonal and they are not available throughout the year, fruit juices make them available all the seasons.

1.7. Evaluation of alternative products, competitors and analysis and its effects on consumption of the product

Various types of fresh fruit juice, carbonated drinks, non-alcoholic beer and also fresh fruits can substitute for artificial juices. However, because of nutritional value and vitamins in fruit juices many people prefer them to carbonated drinks, non-alcoholic beer and alcoholic beverage.

1.8. The strategic importance of the product in Iran and foreign markets

Given the important characteristics of modern and industrial life, which are speed and consequently lack of time, it seems that the use of packaged condiments and juices that can be consumed in a short amount of time; are important in the daily lives of different societies, especially transitional societies in the Middle East, where statistics on women's employment in most countries show a growing trend and hence the of lack of time in families to use traditional products instead is increasingly obvious.

1.9. The major producing countries and product consumer

The United States is the largest consumer of juice in the world followed by countries such as Switzerland and Germany.

The United States is also the largest producer of juice, and countries such as China and Germany are major producers of this product. Regarding the consumption of this product, all countries are major consumers considering their population rate.

2. Situation of supply and demand in Iran and foreign markets

2.1. Study of utilization capacity and production process since the beginning of the Sixth Five Year Economic Development Plan, unit location, the number and level of technology of available units, nominal capacity, practical capacity, lack of full capacity utilization reasons, the name of country and manufacturer of machinery used in production

Based on data obtained from the Organization of Industry, mine and Trade, the juice production units and their amount (capacity) of production are presented in the following table .Production quality of Iranian products is good and competitive in global markets.

The machineries used in this industry are up-to-date ones and 10 percent of producers use the machineries made in Germany, Turkey and China. Production of different parts of juice factory has been localized. Some of the producers and sellers of these machineries are mentioned following:

-Steel industry Sabalan Co.

-Namjoo Machine Manufacturing

-Machine Karan

-Rassel International Trading Co.

		Number of	Consister	investment	
No.	Province	Number of units	(ton)	million	million
		units	(ton)	Rials	Euro
1	Ardabil	12	184,890	1,277,693	-
2	Isfahan	10	6,996	665,092	0.8
3	Alborz	44	72,948	3,214,308	63.179
4	Ilam	3	37,000	394,816	6.873
5	Azerbaijan, East	24	724,830	3,681,720	8.567
6	Azerbaijan, West	33	199,340	3,191,926	0.155
7	Tehran	61	139,179	16,496,973	245.062
8	Chahar Mahaal and Bakhtiari	3	7,500	483,145	-
9	Khorasan, South	3	21,400	135,165	0.068
10	Khorasan, Razavi	11	90,505	4,154,002	11.961
11	Khorasan, North	2	30,000	225,100	-
12	Khuzestan	1	43,400	416,109	-
13	Zanjan	8	56,300	4,129,225	0.025
14	Semnan	1	5,400	105,732	-
15	Sistan and Baluchestan	2	10,730	144,189	-
16	Fars	19	90,550	1,484,495	-
17	Qazvin	10	51,603	648,275	-
18	Qom	12	16,420	260,324	0.679
19	Kerman	2	2,250	65,804	-
20	Kermanshah	6	27,100	1,889,833	1.4
21	Kohgiluyeh and Boyer-Ahmad	3	7,000	376,143	3.498
22	Golestan	6	24,700	421,879	-
23	Gilan	14	81,340	956,223	0.904
24	Lorestan	2	35,000	278,145	-
25	Mazandaran	23	144,719	8,306,924	2.233
26	Markazi	8	296,450	11,069,593	17.122
27	Hormozgān	1	600	24,200	-
28	Hamadan	4	8,200	95,113	_
29	Yazd	2	2,300	10,500	-
	Total nominal capacity	330	330 2,418,650 (4.602 (47	207 5	
]	Practical capacity (50%)	165	1,209,325	04,002,047	387.5

Of licensed operation unit in the field of juice production from concentrate

Source: organization of Industry, Mine and Trade

2.2. Study of the status of new projects and under construction development projects (In terms of number, capacity, operation place, the physical progress rate and the level of their technology and investments by both foreign exchange and other required) and semi-finished projects

Based on data obtained from the Organization of Industry, Mine and Trade, the units under construction of juice and their volume of production are presented in the following table.

	Province	Number of	Consoity	investment	
No.			(top)	million	million
		units (ton)		Rials	Euros
Units under construction of Fruit juices with physical development 60%-99%					9%
1	Ardabil	4	9,000	487,406	4.588
2	Isfahan	2	1,000	68,880	-
3	Alborz	7	7,346	349,467	3.277
4	Azerbaijan, East	11	132,600	2,637,735	53.5
5	Azerbaijan, West	4	17,100	228,015	0.47
6	Tehrans	8	18,325	1,843,267	74.1
7	Kerman	4	17,500	537,620	-
8	Chahar Mahaal and Bakhtiari	2	63,500	138,588	-
9	Khorasan, Razavi	2	12,000	498,480	1.197
10	Khuzestan	5	36,300	950,783	4.698
11	Zanjan	2	10,000	204,291	-
12	Semnan	1	500	32,827	-
13	Fars	1	12,000	31,000	-
14	Qom	5	22,100	1,956,188	35.661
15	Kurdistan	1	5,000	10,450	-
16	Kohgiluyeh and Boyer-Ahmad	1	1,500	73,636	-
17	Golestan	1	5,000	31,900	-
18	Gilan	6	84,972	554,453	-
19	Mazandaran	5	26,500	343,262	0.445
20	Hamadan	1	1,000	22,500	-
21	Yazd	1	3,000	45,790	-
Total Sum		74	486,243	11,046,538	177.936
	Units under construction of	Fruit juices with	physical develo	pment 20%-59	9%
1	Isfahan	3	15,300	323,400	-
2	Azerbaijan, East	2	150,000	3,615,243	94.68
3	Azerbaijan, West	1	6,000	47,110	-
4	Tehran	6	14,200	290,830	-
5	Khuzestan	1	1,800	15,432	-
6	Semnan	1	400	105,959	-
7	Fars	2	4,200	579,924	9.908
8	Qazvin	1	300	10,000	_
9	Qom	1	100	24,206	-
10	Golestan	4	10,000	191,013	
11	Gilan	1	400	9,000	
12	Mazandaran	5	30,650	306,800	21.321
13	Markazi	2	10,400	1,162,721	23.153
14	Hamadan	1	5,000	70,000	-
Total Sum 31 248,750 6,751,638 149.		149.062			

Under Construction Units of juice production from concentrate with 20-99% of physical progress

Source: organization of Industry, Mine and Trade

2.3. The trend of imports of the product in the last five years

juice imports, according to the country's customs statistics, both in terms of currency and weight, we observe declining trend from 2014 to 2019. The most important reason, is the reduction of the country's currency resources and the new sanctions.

In 2018 and 2019, the largest amount of juice was imported from Turkey. The table and figure below show the amount of juice imports during the last 5 years.

year	Weight (ton)	Rails value	Dollar value	Description
2018-19	2,044	176,524,000,801	4,246,127	Turkey:24%_Brazil:22%
2017-18	1,832	140,334,587,871	4,161,373	Turkey:33%_Ireland:25%
2016-17	3,756	191,133,608,320	6,164,895	Brazil:30%
2015-16	5,100	230,806,745,430	7,828,910	Netherlands: 29%
2014-15	6,557	278,877,560,490	10,527,934	Netherlands: 34%

Imports of juice in the last 5 years

Source : The Islamic Republic of Iran Customs Administration (2020)



The amount and value of juice imports in the last 5 years

NO.	Country	Weight (kg)	Value (Rials)	Value (Dollar)	Weight percent
1	Turkey	482,670	30,696,231,178	731,700	23.6
2	Brazil	452,250	40,960,646,330	1,006,892	22.1
3	Ireland	293,336	43,325,469,805	1,031,559	14.3
4	Austria	227,150	17,092,718,422	406,969	11.1
5	Netherlands	207,900	15,164,641,800	361,063	10.2
6	France	194,400	13,871,412,000	330,272	9.5
7	Italy	56,160	5,348,678,400	127,349	2.7
8	Spain	44,000	4,216,767,720	96,098	2.2
9	Greece	37,440	2,399,923,468	57,142	1.8
10	Germany	24,000	1,174,974,120	36,208	1.2
11	Belgium	20,250	1,977,096,478	53,841	1.0
12	UAE	4,892	295,441,080	7,034	0.2
	Sum	2,044,448	176,524,000,801	4,246,127	100.0

Imports of juice divided by country in 2018-2019

Source : The Islamic Republic of Iran Customs Administration (2020)

No.	Country	Weight (kg)	Weight (kg)Value (Rials)		Weight percent
1	Turkey	600,884	43,673,985,746	1,312,287	32.8
2	Ireland	457,293	50,239,337,267	1,484,175	25.0
3	Belgium	202,500	15,465,294,281	476,836	11.1
4	Spain	197,076	7,881,704,409	223,912	10.8
5	Austria	114,425	10,257,195,408	289,912	6.2
6	South Africa	88,108	4,452,126,567	125,615	4.8
7	Italy	79,200	5,188,242,114	158,352	4.3
8	Brazil	42,200	1,564,725,960	43,967	2.3
9	Thailand	19,497	367,034,460	11,316	1.1
10	Greece	18,720	1,089,867,995	30,227	1.0
11	Kenya	9,936	128,909,664	3,974	0.5
12	UAE	1,932	26,164,000	800	0.1
S	um	1,831,771	140,334,587,871	4,161,373	100

Imports of juice divided by country in 2017-2018

Source : The Islamic Republic of Iran Customs Administration (2020)

2.4. The trend of consumption in the last five years

One of the common methods of calculating the amount of internal consumption is to estimate the amount of apparent consumption, which is calculated in the following table.

As can be inferred from the following tables, the apparent consumption of concentrated juice in 2019 was estimated to be 883,000 and 1 million tons, respectively.

	2014-2015	2015-2016	2016-2017	2014-2015	2015-2016	2019-2020
Domestic production (tons)	428,629	553,838	667,701	812,857	946,417	1,111,362
Imports (tons)	6,557	5,100	3,756	1,832	2,044	2,044
Export (tons)	28,579	36,111	13,964	40,838	16,817	16,817
The apparent consumption	406,607	522,827	657,493	773,851	931,644	1,096,589

Estimating apparent consumption of juice in the country over the past 5 years (2014-2019)

2.5. The trend of export product in the last five years and the possibility of its development

Juice exports, especially citrus concentrate, had significant ups and downs in the last 5 years, this means that in 1396, we witnessed the highest amount of currency and weight exports of this product (2017-18). but this amount of, exports in 97 (2018-19) reduced to 40% in 96 (18-18 2017). Most of the juice exports in recent years have been to countries such as Turkey, Afghanistan, Iraq and Russia.

Exports	of	juice	in	the	last 5	years
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year	Weight (ton)	Rails value	Dollar value	Description
2018-19	16,817	937,335,452,156	14,698,625	Iraq33% - Afghanistan 46%
2017-18	40,838	1,843,069,196,722	53,229,509	Turkey 40% - Afghanistan14% Russia16%
2016-17	13,964	553,343,831,089	17,574,676	
2015-16	36,111	1,547,057,579,133	51,997,838	
2014-15	28,579	1,090,961,629,869	41,093,207	

Source : The Islamic Republic of Iran Customs Administration (2020)



The amount and value of juice exports in the last 5 years

No.	Country	Weight (kg)	Value (Rials)	Value (Dollar)	Weight percent		
1	Afghanistan	7,755,976	383,737,671,312	6,072,427	46.12		
2	Iraq	5,600,431	293,213,760,375	4,661,332	33.30		
3	Federation Russian	2,139,920	131,492,516,560	2,014,138	12.72		
4	Pakistan	570,742	49,655,917,865	749,411	3.39		
5	Libya	204,384	9,103,458,000	216,749	1.22		
6	Kuwait	111,936	20,215,241,343	271,913	0.67		
7	UAE	89,478	13,112,392,758	185,642	0.53		
8	Malaysia	62,728	6,247,702,483	72,597	0.37		
9	UK	53,905	5,686,355,012	97,880	0.32		
10	Qatar	48,621	4,477,143,472	64,195	0.29		
11	Other countries	228,327	24,870,436,448	356,534	1.36		
S	Sum	16,817,827	937,335,452,156	14,698,625	100		

Exports of juice divided by country in 2018-2019

Source : The Islamic Republic of Iran Customs Administration (2020)

	1	5			
No.	Country	Weight (kg)	Value (Rials)	Value (Dollar)	Weight percent
1	Turkey	16,451,917	808,373,465,906	23,442,329	40.29
2	Federation Russian	6,771,072	252,334,623,296	7,180,523	16.58
3	Afghanistan	5,942,124	199,097,441,552	5,751,775	14.55
4	Austria	3,927,993	208,752,210,284	5,893,721	9.62
5	Germany	2,135,416	115,406,118,820	3,431,504	5.23
6	India	1,737,557	95,788,540,435	2,795,123	4.25
7	Iraq	1,568,110	48,948,991,300	1,439,158	3.84
8	Poland	623,584	33,317,707,989	935,376	1.53
9	Qatar	434,545	15,830,289,915	464,345	1.06
10	Turkmenistan	301,046	15,629,516,328	451,670	0.74
11	Other countries	944,691	49,590,290,897	1,443,985	2.31
	Sum	40,838,055	1,843,069,196,722	53,229,509	100

Exports of juice divided by country in 2017-2018

Source : The Islamic Republic of Iran Customs Administration (2020)

2.6. Reviewing of products needs based on export priority

Given the growth trend of juice consumption over the last 5 years, which represents an average of 21% growth annually, it is most cautious to consider half of the above growth (10%) as consumption growth of 2020 to 2025 years. also considering the need for, the development of non-oil product exports, the export growth should be considered to be about 5% over the past five-year average and Based on this, the shortage or surplus of the juice product of the next 5 years is estimated.

As can be inferred from the table below, by the year of 2025 Iran will face a shortage of about 339,000 tons of juice, Therefore, in order to alleviate this shortage we either need to expand the existing units or to build new units or to export this product.

	A	U			
Production	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
The domestic consumption (tons)	1,206,248	1,326,873	1,459,560	1,605,516	1,766,067
Export (tons)	17,658	18,541	19,468	20,441	21,463
Total demand (tons)	1,223,906	1,345,413	1,479,028	1,625,957	1,787,531
Output of current units (tons)	1,111,362	1,111,362	1,111,362	1,111,362	1,111,362
Production of new operational units (tons)	68,074	207,770	277,852	312,114	336,652
Total supply (tons)	1,179,436	1,319,132	1,389,214	1,423,476	1,448,013
(Shortage) / surplus	(44,470)	(26,282)	(89,814)	(202,481)	(339,517)

Estimating the required amount of juice over the next 5 years

3- Overview of technology and production methods and product supply in the country and compare it with other countries

In this project, fruit concentrate is used to produce the juice. The reason for converting juice into concentrate and re-converting it to juice that is available to the consumer, is the ease of keeping the concentrate, because of its lower volume than the juice. This section explains the stages of juice production according to the utilizable production lines in the country:

A. Mixing

Depending on the type (fruit juice, nectar, syrup), the concentrate should be mixed with some water, aroma, sugar and acid.

To prepare the juice, the concentrate or the initial brix is diluted with mineral-free water and potable water. for this purpose Mineral-free water should be used. But water that does not alter the natural composition of the juice can also be used. Water must have special properties to prevent sediment and undesirable changes



B. Filtration

In order to separate the suspended solids of the water and sugar from the juice , the produced juice is finally filtered through the filter.

C. de-aerating

When stirring, some air is dissolved in the juice. In order to prevent oxidative changes, the juice is passed through the de-aeration machine to remove the air inside up to a large extent. In this system, the juice like a thin film passes through the cylindrical surface and the air inside is released (taken, extracted) by vacuum (25-30 mmHg).

D. filling

If pasteurization is done after the filling, the juice should be tepid when filling is performed (approximately 2 degrees C). But if the pasteurization is not done after filling, the juice is pasteurized in the plate heat exchanger at the temperature of 90-92°C for 1 minute and then packaged at the temperature of 85°c. for filling process a vacuum system that operates automatically based on pressure equilibrium is used.



E. Cooling

After hot filling or pasteurization, the juice temperature rapidly drops to 30-35 degrees Celsius. This is important both for microbiological stability and for maintaining taste quality. If the bottles are left alone to cool down, it will take a long time and this will cause undesirable changes in the taste and color of the juice.



F. Packaging and Storing

It is best to store the juice in a quarantine for 5 days after being labeled and packaged in a carton. This will increase the speed of inversion and creates a balance in the taste of the juice.



4. Determine the strengths and weaknesses of known technologies (in outline) in the production process

It seems that Conventional technologies have different weakness points. The first disadvantage is in the crushing stage. Because at this stage, unintentionally, the efficiency of the work decreases, because some of the fruit juice is inadvertently removed (wasted). On the other hand, if the size of the pieces does not reach the desired level, then again we will face efficiency decrease because the fruit juice will not be fully extracted. So it seems that the current technologies need to be optimized . The second weakness in the production line occurs after the production stage and is in the draining process. Draining by pressure is not very efficient. However, this method is better than other methods such as centrifugal methods that may still be used in some factories.

The third weakness is in the enzymatic phase. Because with the existing technologies, these substances have to be added as chemicals and foreign substances to the products, and that is not so desirable.

The fourth disadvantage relates to the first stage of condensation, because high temperature will destroy the fruit's vitamin.

5. Determine the minimum economic capacity includes the estimated volume of fixed investment estimated volume with the separation of Rials and foreign exchange (Using information of available and under construction units, UNIDO, internet, the global data banks, technology selling companies and equipment, etc.)

Considering the market need especially that of Khuzistan and the neighboring provinces as well as the project export objectives, and also taking into account the economic capacity, the annual capacity of the project is estimated to be as 2000 tons of fruit juice. This will be achieved in 250 working days and one shift per day if the cash needed to purchase the machineries is provided. The estimated time required to supply equipment and raw materials is 1.5 years.

Years of operation		first year 6 months	second year	third year	forth year
Per	ccentage of capacity	70%	80%	90%	100%
fruit jui	ice	700	1600	1800	2000
Total production		700	700 1600 1		2000
Th	e outcome of selling				
fruit jui	ce (168 million Rails/ton)	117,600.0	268,800.0	302,400.0	336,000.0
Total	million Rails	117,600.0	268,800.0	302,400.0	336,000.0
sales	Million Euro	0.48	1.09	1.22	1.36

Plan production and sales over the next 4 years

Table of Project Investment

			requi	Total			
	incurred Costs	The For	eign currency	Local Currency			
Description	(million Rails)	Million Euro	Equivalent Rails (Million Rails)	Million Rails	(Million Rails)	Million Rails	Equivalent in Million Euro
land	7,513.0	0.0	0.0	0.0	0.0	7,513.0	0.03
landscaping	5,422.0	0.0	0.0	2,696.6	2,696.6	8,118.6	0.033
Construction	6,156.0	0.0	0.0	59,324.0	59,324.0	65,480.0	0.265
utilities	1,500.0	0.0	0.0	2,950.0	2,950.0	4,450.0	0.018
Equipment& Machinery	0.0	0.0	0.0	20,000.0	20,000.0	20,000.0	0.081
laboratory equipment	0.0	0.0	0.0	600.0	600.0	600.0	0.002
transportation	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Office Equipment & Supplies	0.0	0.0	0.0	500.0	500.0	500.0	0.002
Other and unpredicted	0.0	0.0	0.0	3,200.0	3,200.0	3,200.0	0.013
total	20,591.2	0.0	0.0	89,270.6	89,270.6	109,861.8	0.445
Pre- exploitation cost	300.0	0.0	0.0	1,000.0	1,000.0	1,300.0	0.005
Total of fixed Capital	20,891.2	0.0	0.0	90,270.6	90,270.6	111,161.8	0.450
Working capital	0.0	0.0	0.0	44,379.75	44,379.75	44,379.75	0.180
Total Investment	20,891.2	0.00	0.00	134,650.35	134,650.35	155,541.55	0.630

Exchange rate:

1 Euro \approx 247,000 Rails 1 US\$ \approx 202,000 Rails

land specification of project as follows as:

	Are	ea(m ²)	Cost	t (million R	Equivalent in	
Description	done	required	done	required	Total	Euro
land	6261	0.0	7513	0.0	7513	30,418.0

landscaping price as follows as:

	Area(m ²)		Cos	t (million I	Equivalent in	
Description	done	required	done	required	Total	Euro
Excavation and leveling	6000 m ³	0.0	1,200.0	0.0	1,200.0	4,858
Wall (2.5 meters high)	325 m	0.0	3,250.0	0.0	3,250.0	13,158
Asphalt and sidewalk	0	3,127 m ²	0.0	2,501.6	2,501.6	10,128
Green space and lighting	648 m ²	130 m ²	972	195.0	1,167.0	4,725
total			5,422	2,696.6	8,118.6	32,869.0

Construction items Information:

Description	Building Type	Square meters area		Total	Equivalent in		
Description	Dunung Type	Done	Required	Done	Required	Total	Euro
Production and	Industrial shed -						
storage salon	Tiling up to the	0.0	2 052	6 156 0	55 404 0	61 560 0	240 230 8
3 shed	ceiling - Ceramic	0.0	2,032	0,150.0	55,404.0	01,500.0	249,230.8
	floor -						
Administrative	Exterior design of						
buildings and	brick, Inside	0.0	100	0.0	3 000 0	3 000 0	12 145 7
welfare building	stone and painted,	0.0	100	0.0	5,000.0	5,000.0	12,143.7
	ceramic floor						
electronic room	Made of bricks	0.0	12	0.0	120.0	120.0	485.8
Gate guard	Made of bricks,	0.0	80	0.0	800.0	800.0	3,238.9
Total		0.0			5 0 30 4 0		
infrastructure	-	0.0	2244	6,156.0	59,324.0	65,480.0	265,101.0
and costs							

Part of the executive operations of the buildings, including the foundation of the sheds, have been carried out.

Utilities:

Description	Technical Specifications]	Required co (million Ra	Equivalent in Euro	
	specifications	Done	Required	Total	
Floatrification	Electric supply and	1,350	1,500	2,850	11,538.5
Lieumeation	power 125 KW				
Watan	Split 1 "and water	150	500	650	2,631.6
w alei	supply				
Gas	Split and piping	0	500	500	2,024.3
	Air conditioning	0	450	450	1 821 0
Heating & Cooling	30000 btu: 2 unit	0	430	430	1,821.9
Total		1,500	2,950	4,450	18,016.2

Equipment& Machinery product line:

Description	Qty		The foreign currency (EUR)		Equivalent Rails (million	Local Currency (million Rails)		Total costs (million	Equivale nt in
	Done	Required	Done	Required	(Initial Rails)	6		Rails)	Euro
						Done	Required		
steam generator	0	1							
Mix tank	0	1		0				20,000.0	
concentrate preparation	0	1	0		0	0.0	20,000.0		80,972
Pasteurization and packaging	0	1							
Quality control	0	1							
Total			0	0	0	0.0	20,000.0	20,000.0	80,972.0

Supplier and production of the Machineries: Namjoo machine manufacturing company

Execution Period: one year

- Services:
- Basic and comprehensive design
- Construction, supplement of the equipment and Utilities (national and foreign)
- Control system and precise tools
- Instalment of equipment
- Personnel training, pre-commissioning, commissioning, capacity test

laboratory equipment

Description	Qty		The foreign currency (EUR)		Equivalent Rails	Local Currency (million Rails)		Total costs	Equivalent in
	Done	Required	Done	Required	(million Rails)	Done Required		(million Rails)	Euro
Incubators, furnaces, scales and other equipment	1	0	0	0	0	600.0	0.0	600.0	2,429.0
Total	1	0	0	0	0	600.0	0.0	600.0	2,429.0

Transportation

Description		Qty	The cui (I	The foreign currency (EUR)		Local (mill	Currency lion Rails)	Total costs (million	Equivalent in Euro
	Done	Required	Done Required		Rails)	Done	Required	Rails)	
-	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0

Office Equipment & Supplies and Services:

Description	Qty		The foreign currency (EUR)		Equivalent Rails (million	Local Currency (million Rails)		Total costs (million	Equivalent in
	Done	Required	red Done Required Rails)		(minion Rails)	Done Required		(minion Rails)	Euro
Office furniture	0	1	0	0	0	0	65	65	263.2
Tables and chairs	0	4	0	0	0	0	60	60	242.9
Dining table and chair	0	15	0	0	0	0	120	120	485.8
Fax	0	1	0	0	0	0	15	15	60.7
Phone / Modem	0	1	0	0	0	0	10	10	40.5
Computers and Laptops	0	1	0	0	0	0	100	100	404.9
Printer	0	1	0	0	0	0	30	30	121.5
Refrigerator	0	1	0	0	0	0	100	100	404.9
Total			0	0	0	0	500	500	2,024.3

Working capital:

Description	duration	The fo Million Euro	Freign currency Equivalent Rails (Million Rails)	Local Currency Million Rails	Total (Million Rails)	Equivalent in Million Euro
Supplementary Raw Material and Packaging	1 Month	0	0	20,243.33	20,243.33	0.082
Account receivable	1 Month	0	0	22,361.54	22,361.54	0.091
Cash in hand	1 Month	0	0	1,774.87	1,774.87	0.007
total		0	0	44,379.75	44,379.75	0.18

Production costs:

Decorintion	Amount	Equivalent in	
Description	(Million Rials)	(Million Euro)	
Costs of materials	242,920.00	0.983	
Cost of production personnel salary	6,855.20	0.028	
Cost of utilities (fuel and electricity, water)	760.00	0.003	
Cost of repair and maintenance	3,064.47	0.012	
cost of unforeseen production(5%)	7,600.00	0.031	
Depreciation expense	6,757.4	0.027	
Administrative personnel salary	3,558.80	0.014	
Costs of administrative and sales	3,360.00	0.014	
Cost of financial facilities	6,615.00	0.027	
Factory insurance	220.00	0.001	
Total sum	281,711.21	1.141	

6- The annual major required raw materials and annual and to supply outside or inside the country, domestic and foreign exchange and checking the major developments in the supply of essential required items in the past and future

Citrus concentrate as the main ingredients of this process can be supplied from inside the country, particularly from Mazanadran, Fars, Khorasan Razavi and Khuzestan province. Other packaging materials will be provided from Khuzestan and other provinces such as Tehran, Khorasan Razavi, Isfahan and East Azarbaijan.

Required Raw materials:

NO.	Description	Consumption per product unit	Unit Consumption	The amount required for all capacity	Price of unit million) (Rails	Curren The currency (million dollar)	cy prices Equivalent Rails million) (Rails	Cost (million Rails)	Supplying Place	Total cost (million Rail's)	Equivalent in Million Euro
1	citrus concentrate	0.25	ton	500.0	300	0	0	150,000	Domestic	150,000	0.607
2	sugar	0.05	ton	100.0	77	0	0	7,700	Domestic	7,700	0.031
3	citric acid	0.0015	ton	3.0	380	0	0	1,140	Domestic	1,140	0.005
4	Tetra pack 200CC	5000	pcs	4,000,000.0	0.009	0	0	36,000	Domestic	36,000	0.146
5	Tetra pack 1000CC	1000	pcs	1,200,000.0	0.028	0	0	33,600	Domestic	33,600	0.136
6	Carton	216	pcs	432,000.0	0.015	0	0	6,480	Domestic	6,480	0.026
7	Naylon shrink	0.010	ton	20.0	400	0	0	8,000	Domestic	8,000	0.032
		S	um			0	0	242,920	-	242,920	0.983

7. The risk analysis of the project

Strengths:

- Using up-to-date technology
- The possibility of mass production
- High internal rate of return
- High quality and variety of products
- being located in Khuzestan, which is one of the hubs of agriculture and processing industries in the country.
- The existence of Appropriate communication infrastructures such as transit roads, railways, and waterways to access the high consumption domestic and foreign markets, especially Iraq and the Gulf States.
- being Close to important commercial ports such as Imam Khomeini and Khorramshahr Port for exportation

Weakness:

- Lack of liquidity to supply machinery
- Short harvest season of agricultural crops
- perfect competition in processing and food industries
- •

Opportunities:

- Supporting domestic production
- Supporting the attraction of foreign investors
- the Existence of a very large consumer market in the project area and in Khuzestan (the agricultural hub of the country)
- Access to major communicative roads and infrastructures such as freeway, south-north railway, and access to open water for exportation

Threats:

- US sanctions
- Political instability in the Middle East
- variable inflation rates and rising production prices



8. Human resources and employment status

The project employs 16 people, 11 of whom will be working in production section and 5 in the office. Due to the existence of prestigious universities in the province and the existence of technical and engineering graduated students, access to specialist human resources is available.

	S	ex		Required		Monthly salaries	Salaries	Annual	Equivalent
Job Title	F	М	Qty	Shift	Sum	per person (million Rails)	(million Rails)	salaries (million Rails)	in Euro
CEO		*	1	1	1	60	60	984.0	3,983.8
Finance director, sales, administrative		*	1	1	1	45	45	738.0	2,987.9
Financial personnel, sales office	*	*	1	1	1	42	42	688.8	2,788.7
warehouse keeper		*	1	1	1	37	37	606.8	2,456.7
Process engineer	*	*	1	1	1	45	45	738.0	2,987.9
Skilled worker	*	*	3	1	3	42	126	2,066.4	8,366
Worker	*	*	6	1	6	35	210	3,444.0	13,943.3
Secretary	*		1	1	1	35	35	574.0	2,232.9
Guard		*	1	1	1	35	35	574.0	2,323.9
Total			16		16	268	412	10,414.0	42,162.0

9. Determine the amount of water, electricity, gas, telecommunications and communication facilities (road - rail - Airport - Port ...) and how to provide them in the appropriate area to implementation

Andimeshk Industrial estate has the basic infrastructures .water, electricity and gas and telecommunication facilities are also available in the site. The distance from Andimeshk to Ahvaz (capital of the province) is 155 kilometers and 255 kilometers to Imam Khomeini Port. The distance to airport and railway station is about 10 and 5km Respectively.

Description	unit	Annual consumption	Price per unit (Rails)	Total price (million Rails)	Equivalent in Euro
Electricity	KW	200,000	1,400	280	1,133.6
water	m ³	5,000	20,000	100	404.9
Gas	m ³	200,000	1,400	280	1,133.6
Other				100	404.9
	1	total		760	3,077.0

10. Economic and trade support for plan

To stimulate the industrial section and related to the resistance to economy, several projects are implemented and the following are mentioned

In order to study, exchange of views and coordination to resolve the problems and obstacles faced by manufacturing units, "the Working Group of facilitate and remove of production obstacles " is formed in all provinces and with membership of the governor (chairman), head of the provincial Ministry of Industry, Mine and Trade (Secretary), management and planning organization chairman, President of the Chamber of commerce, Industries, mines and Agriculture of province and chairman of the house of industry, mine and trade. The main tasks of this working group can be mentioned as follows:

- Helping to expedite the completion and commissioning of the production of semifinished projects and develop

- Support and contribute to the export development of provincial products.

- Investigating slowdown causes or production units suspension and problem solving coordination.

- Working Group on Economy of Resistance (boom): Regarding to the economy resistive of Ministry of Industries and Business in Act 12868 dated 2016.21.4, the funding are considered in order to completing industrial plans with a physical progress more than 60% and also improving the competitiveness of small and medium production units to increase exports.
- **Investment Guarantee Fund of Small Industries**: The credit guarantees issuance is guaranteed to facilitate financing was through small business facilities and securitized principal and interest and credit facilities granted by banks and financial institutions to small firms. This credit guaranties have been issued for applicants after expert review and validation, obtaining fees with the required securities and warranty credit.

10.1. Supporting of Customs tariff (products and machines) with global tariff

In order to support domestic production and ease of technology supply, the machines' input duty to the project are relatively low at around 10%. In order to support domestic production, the input rights of the products are very high and about 32 to 55%. This prevents the import of similar products to the country.

10.2. financial support (existing units and projects) banks - investment firms

The most important sources of financial credit from banks, can be cited as follows.

1. Foreign exchange reserves: The surplus proceeds from the sale of crude oil facility will be provided support and finance of part of the foreign exchange needs of producers and exporters of private and cooperative sectors. In the framework of contracts and Islamic banking laws and regulations enacted by the opening credits are awarded based on the provisions of the import and export of goods and services.

2. Economy of Resistance Committee (boom): Now, funding is considered for the completion of a physical progress with 60% and industrial production units as well as enhance the competitiveness of small and medium enterprises to increase exports.

3. Foreign Investment Promotion and support Act:

Since 1955, the legal framework for foreign investment in Iran has been the Attraction and support of Foreign Investments law. In line with reforms in the economic structure of the country, the Iranian parliament has offered the foreign investment plan as a Foreign Investment Promotion and Support Act which legislated finally in 1381. This will lead to the development of the legal framework and operational environment for foreign investors in Iran. Some of the new developments in the field of foreign investments include:

• Islamic Republic of Iran is welcome of foreign investments by foreign persons, whether natural or legal persons in all areas of economic activity.

- Recognition of new investment methods in addition to foreign direct investment
- Short and quick process and approval application and foreign investment approval.

• Creating an unique organization called the Center for Foreign Investment Service Organization for Investment, Economic and Technical Assistance of Iran in order to focused and effective support of the activities of foreign investors in Iran

• Further liberalization of foreign exchange mechanisms for more use by foreign investors

In case of absorbing foreign investor, the government considers some bonus, such as:

- 1. Tax exemption for the products of foreign investing companies
- 2. Presenting insurance coverage for the investors
- 3. Presenting customs exemptions for importing equipments required by foreign investing companies
- 4. Granting subside for training local manpower
- 5. Preparing free zones for investment
- 6. Granting infrastructure facilities and less expensive public services such as water and power
- 7. Guaranteeing return on profit and the main capital and prevention from their confiscation and nationalization

11. Analyzes And providing summary and final offer

As for juice, given the growth trend of the juice consumption over the past 5 years, which represents an average of 21% growth annually, in the most caution condition we consider half (10%) of that amount will be for the consumption growth of the year 2020 to 2025. also considering the need for the development of non-oil product exportation, the growth of exports is also estimated at about 5% over the past five-year average . therefore according to this, the shortage of juice is estimated to be at 339,000 tons over the next five years.

Therefore as mentioned above, concentrate juice products will have a shortage of production and supply in 2024- 25. Therefore, based on the general policies of The Islamic Republic of Iran and for mitigating the effects of foreign sanctions, this shortage must certainly be addressed through domestic production. In this regard, in order to continue the export process of juice products, it is

necessary to use the opportunity that exists in Iraq export market and in the near future in Syria export market. also to reduce dependence on single-product oil exports the creation of new units such as Khatamiyan factory is essential.

Cost of (ton)	Juice from concentrate: 135.65 million Rails≅ 549.2 Euro
Sale price of (ton)	Juice from concentrate: 168 million Rails≅ 680.1 Euro
total Sales (100% capacity)	336,000.0 million Rails≅ 1.36 million Euro
Present sales in break-even point	34.45%
Profit (100% capacity)	54,288.79 million Rails≅ 0.22 million Euro
Gross value added	89,255.5 million Rails≅ 0.36 million Euro
Net value added	82,497.8 million Rails≅ 0.33 million Euro
The Gross value added to total Sales	27 %
The Net value added to total Sales	25 %
The Gross value added to Investment	57 %
Investment Return Period	4.4 years

Exchange rate:

1 Euro \approx 247,000 Rails 1 US\$ \approx 202,000 Rails

12- Summary of pre-feasibility plan

General Specification	
Name of The Project	Production of fruit juice from concentrate
Project Capacity	fruit juice from concentrate:2000 tons
Personnel Number	16 persons
Working Days	250 days
Product Usage	Food and Beverage
Marketing	
Product Global Price	923 Euro/ton
Domestic Demand	1.09 million tons
Domestic Production	1.11million tons
Import	2044 tons
Export	16.8 thousand tons
Technical Study	
Land Area	6261 m ²
Building Area	2244 m ²
Main Raw Materials	citrus concentrate, sugar, packing materials
Supplying Place of Raw Materials	Domestic
Power Requirement	125 KW
Water Requirement	5000 m ³
Fuel Requirement	200,000 m ³ gas
Economical & Financial Study	
Fixed Investment Cost	111,161.8 million Rails \cong 0.450 million Euro
Working Capital	44,379.75 million Rails ≈ 0.180 million Euro
Total Investment Cost	155,541.55 million Rails \cong 0.630 million Euro
Annual Sale	336,000.0 million Rails≅ 1.36 million Euro
Net Present Value(NPV)	106,127.77 million Rails≅ 0.43 million Euro
Break Even Point(BEP)	34.45%
Internal Rate of Return(IRR)	33.92%
Investment Return Period	4.4 years
Investment Sources Ratio:	
Equity:21%	33,041.55 million Rails \cong 0.134 million Euro
Finance: 79%	122,500 million Rails \cong 0.496 million Euro