



Islamic Republic of Iran

Ministry of Economic Affairs and Finance

General Department of Economic Affairs and Finance of North Khorasan



## Milky ice-cream

Bidak Bojnourd Industrial park

Center of Investment Services of North Khorasan

2021 April

# Summary of Technical-Economical Pre-Feasibility Study

The Name: Chocolate-Milk Ice Cream

Sector: Agricultural

Subsector: Alterant Industries

ISIC Code: 1520512750

The owner of:

Organization of Economic Affairs and Finance (North Khorasan)



The ADDRESS:

Iran, North Khorasan, Bojnourd

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# 1 Abstract

## 1.1 Project Profile

Table 1: Summary Sheet

Project Introduction			
<b>Project Title</b>	Chocolate-Milk Ice Cream		
<b>Sector</b>	Agricultural		
<b>Sub Sector</b>	Alterant Industries		
<b>Location</b>	Iran, North khorasan, Bojnourd		
<b>The County</b>	Bojnourd		
<b>Products / Services</b>	Chocolate-Milk Ice Cream		
<b>Annual Nominal Capacity</b>	2,000		Ton
<b>The Raw Material</b>	Milk, Sugar		
<b>Employment</b>	24		Person
<b>Land Area</b>	5,800		m <sup>2</sup>
<b>Floor Area</b>	1,480		m <sup>2</sup>
<b>Energy and Water Consumption</b>	Water Consumption	20,000	m <sup>3</sup> in year
	Electricity Consumption	240	KW
	Gas Consumption	2,500,000	m <sup>3</sup> in year
<b>Fixed Capital</b>	141,566		Million Rial
<b>Working Capital (The First Year)</b>	71,624		Million Rial
<b>Payback Period</b>	3.12		Year
<b>Net Present Value (NPV)</b>	280,434		Million Rial
<b>Internal Rate of Return (IRR)</b>	56		%
<b>Modified Internal Rate of Return (MIRR)</b>	29		%
<b>Break Even Point</b>	27		%
<b>The Exchange Rate (Dolar)</b>	240,000		Rial
<b>Description</b>	In this project, all the materials related to the study of the chocolate-milk ice cream market especially domestic and foreign supply and demand, are examined		

*Table 2: Legal Authorizations*

Licensure Status	
Descriptions	Issuance Status
Principal Agreement (Establishment licensure)	☒
Land Allocation	☒
Environmental Inquiry	☒
Possibility of Water Supply	☒
Possibility of Electricity Supply	☒
Possibility of Electricity Supply	☒
Possibility of Gas Supply	☒

*Table 3: Total Investment*

Descriptions	Local Currency Required			Foreign Currency Required (Million Euro)	Total (Million Euro)
	(Million Rial)	Rate	Equivalent in (Million Euro)		
Fixed Capital	141,556	240,000	0.59	0	0.59
Working Capital	71,624		0.3	0	0.3
<b>Total Investment</b>	<b>213,180</b>	240,000	<b>0.88</b>	<b>0</b>	<b>0.88</b>

- Value of foreign equipment / machinery: Million Euro
- Value of local equipment / machinery: 0.12 Million Euro
- Net present value (NPV): 5.6087 Million Euro in years
- Internal Rate of Return (IRR) (for 10 years): 56%
- Payback period: 3.12 years

Table 4: General Information

Company Profile	
Project Type	Establishment <input checked="" type="checkbox"/>
Company Name	North Khorasan Organization of Agriculture Jihad
Contact Person (Name and Position)	Mr Rezvan Nikbakht
Email	et.1383@yahoo.com
Mobile	+989379094738
Tel	+9858-32257990
Website	http://portal.nkj.ir
Address	North Khorasan Province, Bojnurd, Chehelodometri Kamarbandi Blvd, North Khorasan Organization of Agriculture Jihad
Company's Legal Structure	Government <input checked="" type="checkbox"/>

## 2 Project Location

### 2.1 Province: North khorasan

### 2.2 The County: Bojnourd

Bojnourd is the capital city of North Khorasan Province, Iran. It is about 701 km from Tehran. Bojnourd is located in the plains enjoying a mild and mountainous weather.

There are several reason for investing in bojnourd, such as:

#### 2.2.1 Agriculture Section Advantages

- Suitable and diverse climatic conditions and having relatively suitable rainfall
- Having far more livestock per capita than the national average
- Having a considerable supply of diverse fruits
- The Possibility of establishing agricultural conversion industries in industrial parks

#### 2.2.2 Tourism Section Advantages

- Having the presence of different ethnicities and producing handicrafts related to the culture of each ethnic group
- Being in a special geographical position and traveling 24 million passengers annually (ten percent of the total number of traveling passengers in the country) through North Khorasan

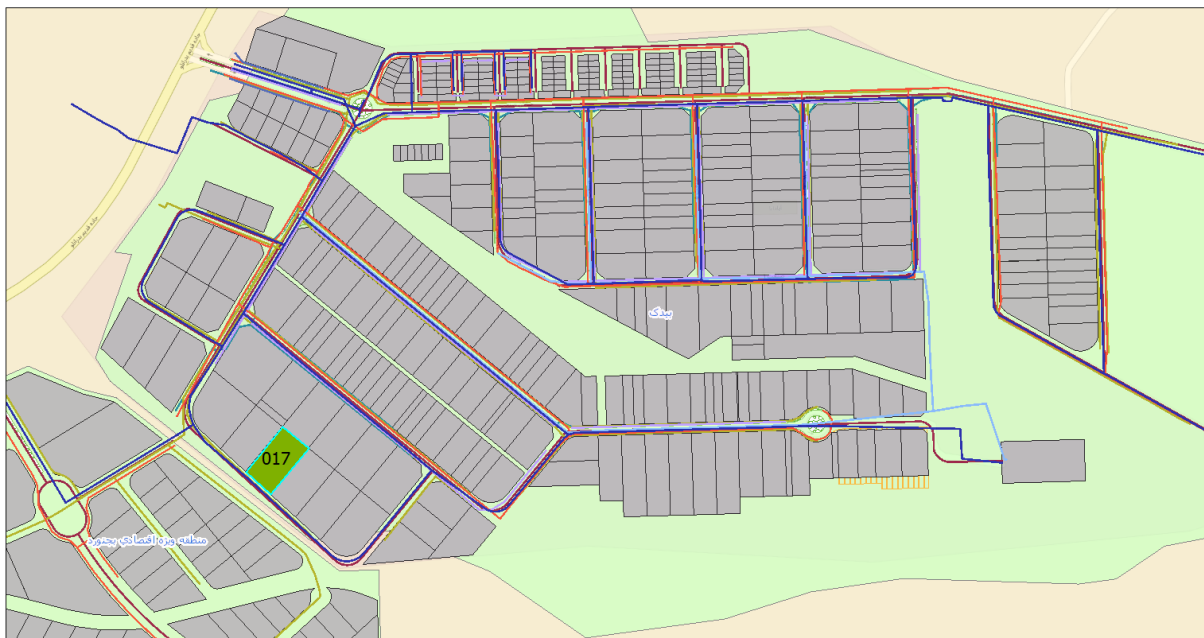
### 2.2.3 Mine and Industry Section Advantages

- Having large industries of alumina, steel, piping, petrochemical, cement and the availability of the development of industrial activities in downstream industries and creating a value chain.
- Conducting mineral exploration studies in Bojnourd, and valuable minerals for processing
- The existence of the Bojnord special economic zone has distinct advantages, including the shortest distance to the provincial capital among all special economic zones in the country, as well as its proximity to the Bidak industrial town.

### 2.2.4 Urban Development Section Advantages

- Appropriate and significant justification of urban and commercial projects and plans according to the characteristics and advantages of tourism, agriculture and industrial areas.
- The existence of transferable lands with suitable location.
- The need for commercial and tourism spaces in Bojnord due to the low per capita of these spaces.

This project will be construct in part 17 with coordinates (4147060,521648) in Bidak Bojnourd Industrial Park. Proposed location of project is shown in Figure 1.



*Figure 1: Location of Proposed Land in Bidak Bojnourd Industrial Park*

## 2.3 The Project: Chocolate-Milk Ice Cream

## 2.4 Access to the Infrastructures

Table 5: Access to Infrastructures

No.	Needed Infrastructures	Distance to the Project	The Supply Infrastructures
1	Water	0	is provided
2	Electricity	0	is provided
3	Gas	0	is provided
4	Telecommunications	0	is provided
5	High way	<1 km	is provided
6	Sub way	0	is provided
7	Airport	8	is provided
8	Amirabad Port (Behshahr)	417	is provided
9	Bandar Abbas Port	1,493	is provided
10	Rail way station of Joveyn	170	is provided
11	Rail way station of Jajarm	192	is provided

## 3 Technical Specifications of Plan

### 3.1 Product

Table 6: Project Specifications Based on ISIC Code

The Product	ISIC Code	Customs Tariff	Environmental Category
Chocolate-milk Ice Cream	1520512750	2105000	1

In this project, all the materials related to the study of the chocolate-milk ice cream market especially domestic and foreign supply and demand, are examined. Ice cream is a frozen and tasty dessert that should contain at least 10% milk fat. The amount of this fat can vary from 10 to 16%, which ice cream usually contains 14% milk fat, and ice cream can also contain other types of dairy products such as cream, which is prepared with sweeteners and flavorings. The world's first industrial ice cream factory opened in 1,851 in Maryland.



The making of ice cream probably dates back to the Achaemenid Empire around 500 BC. In this project, milk-based ice cream with different flavors such as cocoa and chocolate will be produced in wicker and cup packages in different weights. The necessity of implementing this project can be examined from several aspects. The first aspect of the abundance of primary resources at the project site is milk, the main ingredient of ice cream, and in North Khorasan province milk production is at a desirable level, and farmers sell the produced milk at a low price outside the province. Due to the importance of using fresh milk and the very low cost of milk transportation, it is very necessary to establish a factory to implement this project in the province. The second aspect is related to manpower. Although unemployment rates in North Khorasan Province are relatively favorable, the presence of a large number of skilled workers can be a very valuable opportunity to set up an ice cream factory. Taking advantage of this opportunity to prevent the migration of the province's labor force at this time is very necessary. The third aspect is related to exports. North Khorasan Province is geographically close to Afghanistan and Pakistan. Short distances have a huge impact on reducing transportation costs, and on the other hand Afghanistan and Pakistan are among the hot regions that tend to import ice cream in summer.

### **3.2 Project's Requirements**

According to studies on the production of dairy ice cream, its demand trend from 2,021 to 2,025 is projected to increase with a slight slope, which to some extent reassures new investors. So that the amount of this demand will increase by about 12,000 tons from 2,020 to 2,023. By reducing the capacity of factories with physical progress (above 75%), the country's needs will be saturated by 2,023. It should be noted that the capacity of this factory is 2,000 tons, so from the perspective of the country's needs, there is concern for the construction of this factory. But from the provincial point of view, considering that we are producing about 700 tons of ice cream (according to the information of Agricultural Jihad Organization of the province) and based on the population of the province, our share of production should be about 5,000 tons, so about 4,000 tons is needed by our province. Supplied. Therefore, if the factory in question in the province can compete with other provinces in terms of product with appropriate quality; It can take a large part of the

province's market, and because the export forecast is increasing, with proper planning, we can also think about exports.

Finally, the authors of the plan propose to set up a factory, provided that they have products of competitive quality with a strong set of marketers.

### 3.3 Space and Infrastructure Required

*Table 7: Land Purchase Costs (Million Rial)*

Specifications	Area ( $m^2$ )	Price per $m^2$	Cost		
			Paid Cost	Needed Fund	Total
A piece of land in Bojnourd	5,800	1.5	0	0	8,700

*Table 8: Site Preparation and Development Costs (Million Rial)*

Description	Working Capacity	Unit	Unit Price	Paid Cost	Needed Fund	Total
Excavation	5,800	cm	0.3	0	0	1,740
Wall Construction and door	500	Sm	9	0	0	4,500
street construction (5% of the amount of land)	290	Sm	7	0	0	2,030
Green space and Lighting	58	No	8	0	0	464
<b>Total</b>				<b>0</b>	<b>0</b>	<b>8,734</b>

*Table 9: Civil Works, Structures and Buildings Costs (Million Rial)*

Description	Area ( $m^2$ )	Unit Price	Paid Cost	Needed Fund	Total
Production Hall	1,000	25	0	0	25,000
Raw material warehouse	200	30	0	0	6,000
Product warehouse	200	25		0	5,000
Office building	50	45	0	0	2,250
welfare and guardroom	30	45	0	0	1,350
<b>Total</b>			<b>0</b>	<b>0</b>	<b>39,600</b>

Table 10: Infrastructures

No	Description	Unit	Annual Consumption	Unit Cost (Rial)	Total (Million Rial)
1	Water consumption	$m^3$	20,000	700	140
2	Electricity consumption	$Kw$	1,200,000	1,100	1,320
3	Gas consumption	$m^3$	2,500,000	1,200	3,000
4	others				1,076
<b>Total</b>					<b>5,536</b>

### 3.3.1 Equipment and Machinery

Table 11: Plant Machinery and Equipment Costs (Million Rial)

Description	Unit Cost	Costs Required				Total
		Local Costs	Costs Of Currency		Cost To Complete	
			Rate	(Million Euro)		
Raw Milk Tank	1,300	1,300	240,000	0	0	1,300
Filter	150	150		0	0	150
Process Reservoir	1,000	1,000		0	0	1,000
Terry Blender	450	450		0	0	450
Pastor Machine	2,600	2,600		0.01	0	2,600
Aging Tanks	2,000	4,000		0.01	0	4,000
Freezers	4,000	4,000		0.01	0	4,000
Freezing Tunnel	4,000	4,000		0.01	0	4,000
Cup Packing Machine	1,500	1,500		0.01	0	1,500
Wicker Packing Machine	2,500	2,500		0.01	0	2,500
Boiler	1,500	1,500		0.01	0	1,500
Homogenizer Machine	1,500	1,500		0.01	0	1,500
Ice Bank	3,000	3,000		0.01	0	3,000
Strict Machine	300	300		0	0	300
Cooling Tower	700	700	0	0	700	

Description	Unit Cost	Costs Required			Total	
		Local Costs	Costs Of Currency			Cost To Complete
			Rate	(Million Euro)		
Cip	1,500	1,500		0.01	0	1,500
<b>Total Cost of Machinery</b>		<b>30,000</b>		<b>0.12</b>	<b>0</b>	<b>30,000</b>

- The exchange rate is: 1 € = 240,000 Rial

### 3.3.2 Raw Material and Intermediate Components

*Table 12: Raw Material and Intermediate Components (Million Rial)*

Description	Unit	Total Consumption of the Raw Material	Price per Unit of Raw Material	Annual Cost of Providing Material
Raw material & Packaging	<i>ton</i>	-	-	67,717
Salary	<i>Rial</i>	-	-	2,985
Energy costs (fuel, electricity and water)	<i>L/KW/CM</i>	-	-	5,536
Repair and maintenance	<i>Rial</i>	-	-	4,837
<b>Total</b>				<b>81,075</b>

### 3.3.3 Management and Human Resources

*Table 13: Salary of Administrative Staff (Million Rial)*

No.	Position	Number of Shifts	Personnel per Shift (No.)	Total Staff (People)	Monthly Salary (per Person)	Annual Salary
1	manpower (in Administrative sector)	-	-	8	71.25	6,840
2	manpower (in Production sector)	-	-	16	57.66	11,070
<b>Total</b>				<b>24</b>		<b>17,910</b>

- Number of skilled personnel required: 8
- Number of non- skilled personnel required: 16
- Total number of personnel required: 24

## 4 Market Study and Competition

### 4.1 Examining Supply And Demand Trends

The amount of domestic supply or production of chocolate-milk ice cream based on license (according to the information of the Ministry of industry, Mine and Trade) from 2015 up to 2020 is presented in Table 14.

*Table 14: The Amount of Domestic Supply*

Year	Nominal Capacity (Tons)
2015	14,910,894
2016	15,063,659
2017	15,150,424
2018	15,274,438
2019	15,382,323
2020	15,482,613

The real production capacity of active units in 2015 up to 2020 is shown in Table 15.

Table 15: The Real Production Capacity of Active Units in 2015 up to 2020

Year	Nominal Capacity (Tons)
2015	495,847
2016	500,927
2017	503,812
2018	507,936
2019	511,524
2020	514,859

The following chart shows the prediction of production according to the Table 15 based on linear regression.

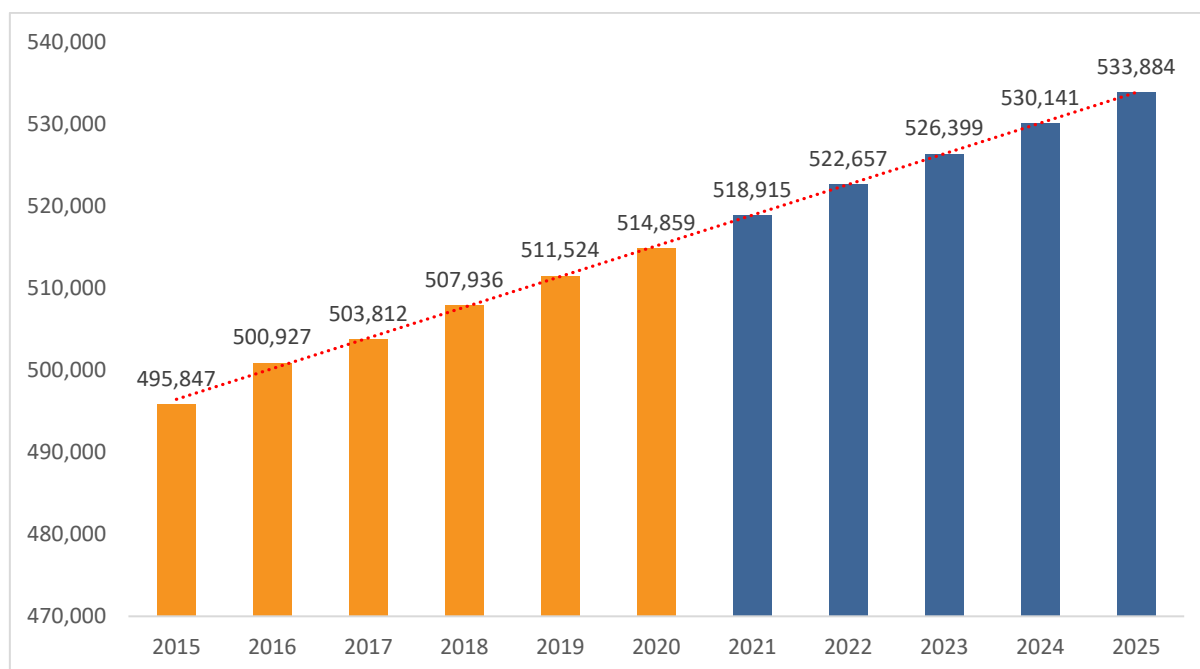


Figure 2: The Prediction of Production

. As the Figure 2 shows, the amount of chocolate-milk ice cream production is increasing  
 The amount of imports to the country is based on the information of the Tehran Chamber  
 . of Commerce, Industries, Mine and Agriculture at <http://tccim.ir> is zero  
 The amount of exports from the country is based on the information of the Tehran  
 Chamber of Commerce, Industries, Mine and Agriculture at <http://tccim.ir> is presented in  
 .Table 21

Table 16: The Amount of Exports

Year	Customs Tariff	Weight (Tons)	Major Countries
2015	21050000	41,462	Iraq, Pakistan, UAE, Saudi Arabia, Qatar, Kazakhstan, Georgia
2016	21050000	36,928	Iraq, Pakistan, USA, UAE, England, Malaysia
2017	21050000	37,313	Iraq, Pakistan, USA, UAE, Malaysia, Qatar, Bahrain
2018	21050000	41,804	Iraq, Pakistan, UAE, Malaysia, Qatar, Bahrain, Georgia

The following chart shows the prediction of exports according to the based on linear regression.

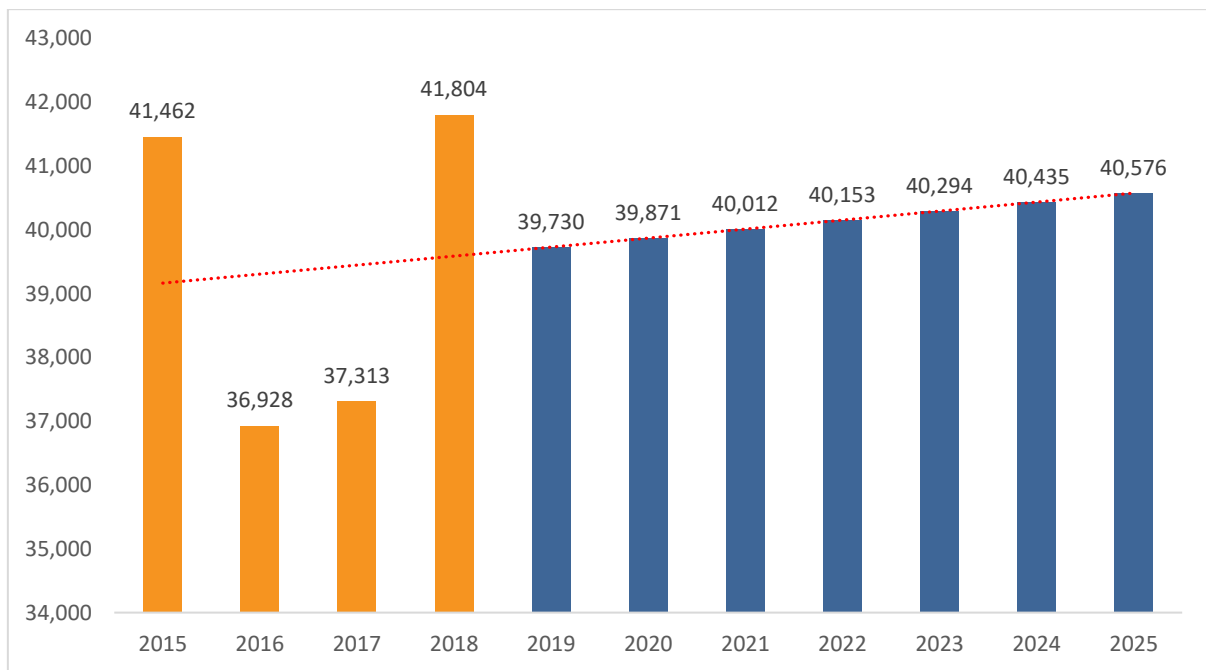


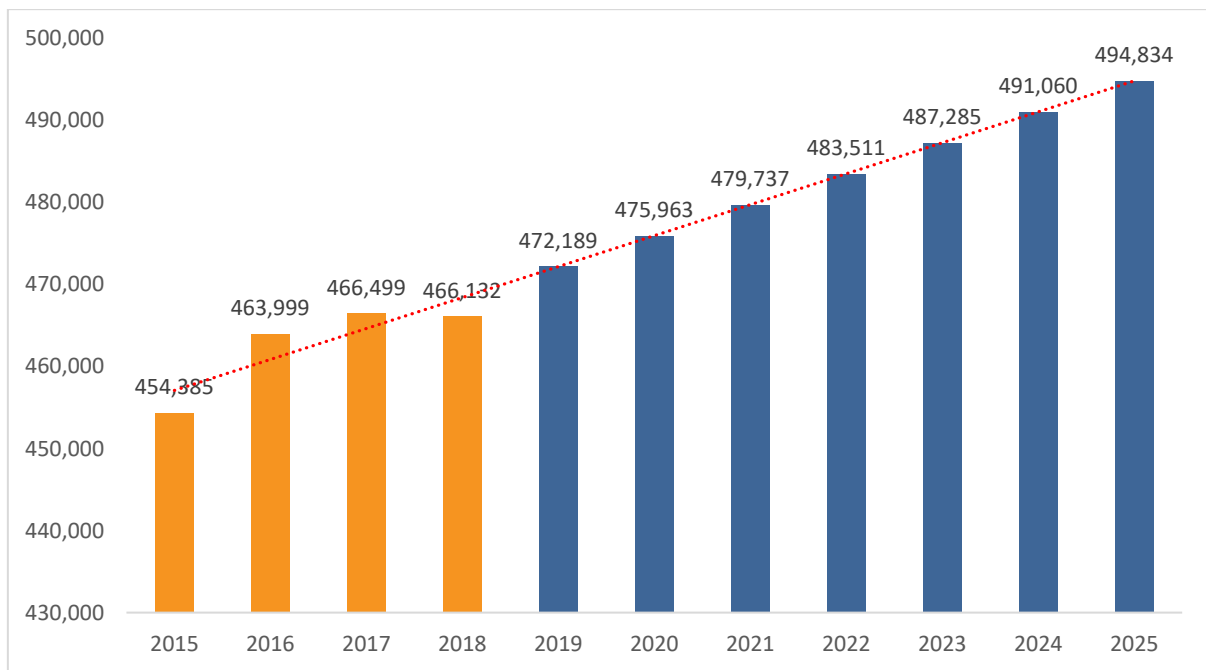
Figure 3: The Prediction of Exports

The amount of domestic demand, which is equal to the amount of domestic production plus the amount of imports minus the amount of exports, for the three products is given in the Table 17.

*Table 17: The Amount of Domestic Demand*

Year	Demand (Ton)
2015	454,385
2016	463,999
2017	466,499
2018	466,132

The following chart shows the prediction of domestic demand according to the Table 17 based on linear regression.



*Figure 4: The Prediction of Domestic Demand*

As the Figure 4 shows domestic demand of chocolate-milk ice cream is increasing. So it can be claimed that the factory can be established without the concern of selling the product.

In the Table 18, the information of the units that have obtained license is presented based on the amount of progress.



Table 18: The Information of The Units that have Obtained License

Progress Percent	Capacity (Tons)
0% - 25%	255,050
25% - 50%	57,575
50% - 75%	82,290
75% - 100%	39,180

## 5 Financial Projection

### 5.1 The Cost Estimate

Table 19: Total Investment (Million Rial)

No.	Subject	Cost
1	Fixed investments	141,566
2	Working Capital	71,624
<b>Total Investment</b>		<b>213,180</b>

Table 20: Fixed Capital (Million Rial)

Subject	Paid Cost	Cost Required				Total cost
		Local Cost	Foreign Exchange Cost		Needed Fund	
			Rate	(€)		
Land Purchase	0	8,700	240,000	0.03	0	8,700
Landscaping	0	8,734		0.03	0	8,734
Building	0	39,600		0.1	0	39,600
Equipment and Machinery	0	30,000		0.12	0	30,000
Laboratory and Workshop Supplies and Equipment	0	498		0	0	498
Facilities	0	18,650		0.07	0	18,650
Transportation	0	3,500		0.01	0	3,500

Subject	Paid Cost	Cost Required				Total cost
		Local Cost	Foreign Exchange Cost		Needed Fund	
			Rate	(€)		
Office Services Equipment	0	560		0	0	560
Pre-Operation Costs	0	18,454		0.07	0	18,454
Unforeseen (10% Of The Above Items)	0	12,870		0.05	0	12,870
<b>Total Fixed Investment</b>	<b>0</b>	<b>141,566</b>		<b>0.59</b>	<b>0</b>	<b>141,566</b>

Table 21: Working Capital (Million Rial)

Subject	Day	Total
Packaging material (2 months raw materials and packaging)	60	67,717
Salary (2months salary)	60	2,985
Imprest fund (15 days of water, electricity, fuel and repair costs)	15	923
<b>Total</b>		<b>71,624</b>

Table 22: Fixed and Variable Costs

.No	Production Cost	Fixed Cost		Variable Cost	
		%	Cost	%	Cost
1	Raw Material	0	0	100	406,300
2	Energy & Utility	20	1,107	80	4,429
3	Repair & Maintenance	20	967	80	3,870
4	Production Salary	70	12,537	30	5,373
5	Depreciation	100	11,228	0	0
<b>Total Production Costs</b>			<b>25,840</b>		<b>419,971</b>

## 5.2 Break-Even Analysis

Table 23: Break-even Analysis

Period	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Break-even ratio (%)	26.91	25.85	24.88	24.0	23.11	21.99	21.37	20.81	20.30	19.84

## 5.3 Sensitivity Analysis of IRR

Table 24: Sensitivity Analysis of IRR

Variation (%)	Sales Revenue	Increase in Fixed Assets	Operating Costs
-20.00%	-55.22%	66.58%	113.91%
-16.00%	-7.06%	64.00%	102.15%
-12.00%	13.41%	61.64%	90.43%
-8.00%	28.14%	59.47%	78.76%
-4.00%	41.93%	57.46%	67.15%
0.00%	55.60%	55.60%	55.60%
4.00%	69.32%	53.87%	44.09%
8.00%	83.13%	52.26%	32.53%
12.00%	97.01%	50.75%	20.61%
16.00%	110.96%	49.34%	7.24%
20.00%	124.96%	48.01%	-14.99%

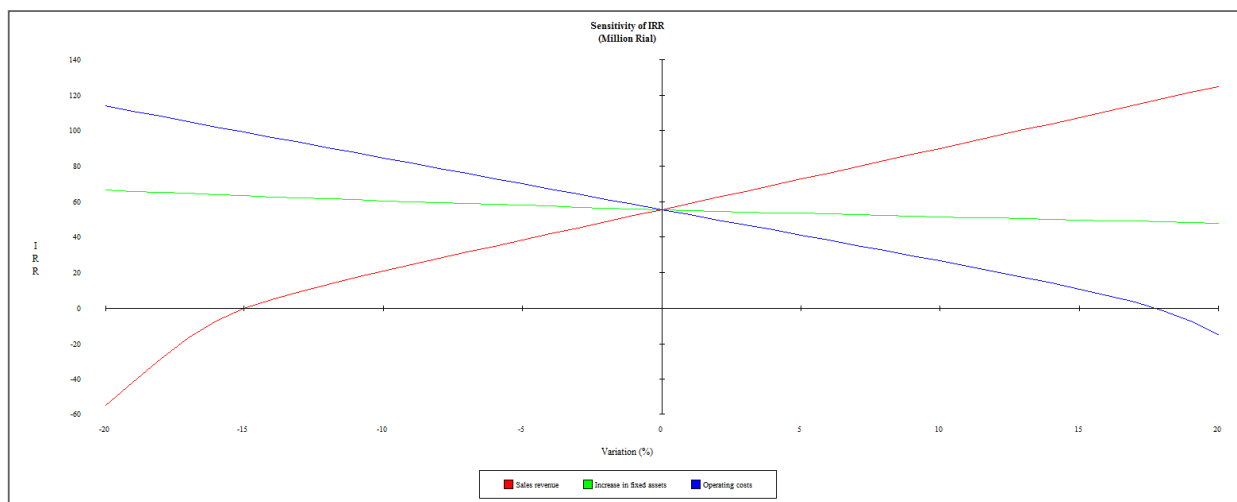


Figure 5: Sensitivity Analysis of IRR

## 6 Duration of Project Operation

The time of doing early stages and completing its process is about 19 months.

Table 25: Action Plan and Implementaion Schedule

Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Land Purchase	█																								
Constructing Buildings		█	█	█	█	█	█	█	█																
Execution of Facilities								█	█	█	█	█													
Order, Purchase of Machinery										█	█	█	█	█	█	█									
Landscaping																█	█	█							
Machinery Strat-up and Trial Production																		█	█						

## 7 Incentives, Features And Advantages of Project

North Khorasan Province is a province located in northeastern Iran. Bojnord is the capital of the province. This province contains many historical and natural attractions, such as mineral water springs, small lakes, recreational areas, caves and protected regions, and various hiking areas. Advantages of the agriculture of this province involves favorable and diverse climatic conditions and other parameters affecting growth.