



Model Detailed Project Report

ICE CREAM PLANT

Prepared by

National Institute of Food Technology

Entrepreneurship and Management(NIFTEM)

Plot No. 97, Sector 56, HSIIDC, Industrial Estate, Kundli,

Sonipat, Haryana 131028

Ministry of Food Processing Industries, Government of India

1. INTRODUCTION

ICE CREAM PLANT



Ice cream is a sweetened frozen food typically eaten as a snack or dessert. It may be made from dairy milk or cream and is flavored with a sweetener, either sugar or an alternative, and any spice, such as cocoa or vanilla.

Ice cream may be served in dishes, for eating with a spoon, or licked from edible cones. Ice cream may be served with other desserts, such as apple pie, or as an ingredient in ice cream floats, sundaes, milkshakes, ice cream cakes and even baked items, such as Baked Alaska.

Ice cream is a mixture of milk, cream, sugar, and sometimes other ingredients that has been frozen into a soft, creamy delight using special techniques. Ice cream has been a popular treat for hundreds of years but has only become commonplace since the widespread use of refrigeration. The exploding popularity of ice cream has led to a number of ice-cream variations including frozen custard, frozen yogurt, and even non-dairy versions made with ingredients like coconut milk.

2. MARKET POTENTIAL:

India's ice cream market, one of the fastest growing markets in the Asia Pacific (APAC) region, is forecast to grow from INR121.4bn (US\$1.8bn) in 2018 to INR213.6bn (US\$2.9bn) in 2023, registering a compound annual growth rate (CAGR) of 12%.

The healthy growth of the market can be attributed to numerous forces. Population growth, rising disposable incomes, urbanisation rates, changing consumer preferences, improved cold supply chain and growing deep freezer penetration are some of the factors that are broadening the growth aspects of the market.



3. PRODUCT DESCRIPTION

3.1 Raw Material sources

Following raw material is required as the major raw material for the manufacturing of Ice cream.

- Fruit juice
- Sweet Orange Essence
- Glucose
- Cups & cones
- Milk
- Sugar
- Stabilizers
- Colors: Lemon, yellow, orange etc.

Average raw material (cost per KG): Rs. 60-65

3.2 MANUFACTURING PROCESS

- Preparation of liquid base.
- For this you will firstly have to collect fresh milk and perform a quality test.
- Then it will be heated at degree Celsius temperature to separate cream.
- Standardization of this milk will be done wherein fat content is balanced in skim milk in the required quantity.
- Sugar is now added to this milk in the required quantity.
- Milk is now pasteurized, in which milk is heated at 80 to 85 degree temperature for some time. This process helps in reducing spoilage micro-organisms present in milk.
- Now milk is cooled till 15 degree Celsius.
- Taking the help of pump, milk is now passed into homogenizer here molecular breakdown of fat globules present in milk takes place by high pressure fast flow.
- Now ice cream stabilizers and emulsifiers are added in milk at required composition and is mixed properly by stirring.
- Now liquid base is ready.
- Now to prepare soft ice cream, this milk is transferred for ageing in ageing tank. Ageing tank temperature is set at 4 to 5 degree Celsius where mixture is kept for 5 to 8 hours.
- After ageing mixture is transferred to flavor tank and flavor essence is added.

- Then mixture is send to the continuous freezer, where final product is made.
- Packaging in box, cups, cones etc.



4. PROJECT COMPONENTS


4.1 Land

Land required 1500-1800 square feet approx.

Approximate rent for the same is Rs.30000-35000 per month.

4.2 Plant & Machinery

Machine	Description	Image
Batch freezer		
Pasteurizer	<p>Pasteurization is used to achieve food preservation and food safety. Most liquid products are heat treated in a continuous system where heat can be applied using a plate heat exchanger or the direct or indirect use of hot water and steam.</p>	

Homogenizer	Homogenization provides the following functions in ice cream manufacture: Reduces size of fat globules. Increases surface area.	
Ice cream hardener		
Other Equipment's	Collection tank, Cream separator, ice cream moulds, other handling equipment's, Ageing tank	

Note: cost of the machinery is approx. Rs. 21,00,000 excluding GST and other transportation cost.

4.3 Misc. Assets

S.N.	Item Description	Rate
1	Electricity connection	50,000
2	Furniture and equipment's	50,000

4.4 Power Requirement

The borrower shall require power load of 15 KW which shall be applied with Power Corporation. However, for standby power arrangement the borrower shall also purchase DG Set.

4.5 Manpower Requirement

6-7 Manpower are required for the Ice cream manufacturing unit.

Includes:

2 Skilled Labour

2 Unskilled Labour

1-2 Helper

1 Accountant

5. FINANCIALS

5.1 Cost of Project

COST OF PROJECT	
(in Lacs)	
PARTICULARS	Amount
Land & Building	Owned/rented
Plant & Machinery	21.00
miscellaneous Assets	1.00
Working capital	3.89
Total	25.89

5.2 Means of Finance

MEANS OF FINANCE	
PARTICULARS	AMOUNT
Own Contribution (min 10%)	2.59
Subsidy @35%(Max. Rs 10 Lac)	7.70
Term Loan @ 55%	12.10
Working Capital (bank Finance)	3.50
Total	25.89

5.3 Projected Balance Sheet

(in Lacs)					
PROJECTED BALANCE SHEET					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
<u>Liabilities</u>					
Capital					
opening balance		10.99	11.99	12.95	14.52
<i>Add:- Own Capital</i>	2.59				
Add:- Retained Profit	3.20	5.50	7.95	9.57	12.15
Less:- Drawings	2.50	4.50	7.00	8.00	10.00
Subsidy/grant	7.70				
Closing Balance	10.99	11.99	12.95	14.52	16.67
Term Loan	10.76	8.07	5.38	2.69	-
Working Capital Limit	3.50	3.50	3.50	3.50	3.50
Sundry Creditors	0.81	0.94	1.07	1.22	1.38
Provisions & Other Liab	0.20	0.25	0.30	0.36	0.43
TOTAL :	26.26	24.74	23.19	22.29	21.98
<u>Assets</u>					
Fixed Assets (Gross)	22.00	22.00	22.00	22.00	22.00
Gross Dep.	3.25	6.02	8.37	10.38	12.09
Net Fixed Assets	18.75	15.98	13.63	11.62	9.91
Current Assets					
Sundry Debtors	3.15	3.69	4.22	4.78	5.43
Stock in Hand	1.91	2.18	2.47	2.81	3.17
Cash and Bank	2.45	2.89	2.88	3.08	3.48
TOTAL :	26.26	24.74	23.19	22.29	21.98

5.4 Projected Cash Flow

(in Lacs)					
PROJECTED CASH FLOW STATEMENT					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
<u>SOURCES OF FUND</u>					
Own Margin	2.59				
Net Profit	3.20	5.56	8.40	10.25	13.50
Depriciation & Exp. W/off	3.25	2.77	2.36	2.01	1.71
Increase in Cash Credit	3.50	-	-	-	-
Increase In Term Loan	12.10	-	-	-	-
Increase in Creditors	0.81	0.12	0.13	0.15	0.16
Increase in Provisions & Oth lib	0.20	0.05	0.05	0.06	0.07
Sunsidy/grant	7.70				
TOTAL :	33.35	8.50	10.94	12.47	15.45
<u>APPLICATION OF FUND</u>					
Increase in Fixed Assets	22.00				
Increase in Stock	1.91	0.27	0.29	0.34	0.36
Increase in Debtors	3.15	0.54	0.53	0.56	0.65
Repayment of Term Loan	1.34	2.69	2.69	2.69	2.69
Drawings	2.50	4.50	7.00	8.00	10.00
Taxation	-	0.06	0.45	0.68	1.35
TOTAL :	30.90	8.06	10.95	12.27	15.05
Opening Cash & Bank Balance	-	2.45	2.89	2.88	3.08
Add : Surplus	2.45	0.44	(0.01)	0.20	0.40
Closing Cash & Bank Balance	2.45	2.89	2.88	3.08	3.48

5.5 Projected Profitability

(in Lacs)					
PROJECTED PROFITABILITY STATEMENT					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilization %	50%	55%	60%	65%	70%
<u>SALES</u>					
Gross Sale					
ICE CREAM	78.67	92.26	105.45	119.45	135.64
Total	78.67	92.26	105.45	119.45	135.64
COST OF SALES					
Raw Material Consumed	48.75	56.10	63.90	73.13	82.95
Electricity Expenses	4.50	5.18	5.95	6.84	7.53
Depreciation	3.25	2.77	2.36	2.01	1.71
Wages & labour	5.04	5.54	6.10	6.71	7.38
Repair & maintenance	1.97	2.31	2.64	2.99	3.39
Packaging	2.36	2.77	3.16	3.58	4.07
Cost of Production	65.87	74.66	84.11	95.25	107.03
Add: Opening Stock /WIP	-	1.10	1.24	1.40	1.59
Less: Closing Stock /WIP	1.10	1.24	1.40	1.59	1.78
Cost of Sales	64.77	74.51	83.95	95.07	106.83
GROSS PROFIT	13.90	17.75	21.50	24.38	28.81
	17.67%	19.23%	20.39%	20.41%	21.24%
Salary to Staff	3.24	3.56	3.92	4.31	4.74
Interest on Term Loan	1.19	1.05	0.75	0.46	0.16

Interest on working Capital	0.39	0.39	0.39	0.39	0.39
Rent	3.60	3.96	4.36	4.79	5.27
selling & adm exp	2.28	3.23	3.69	4.18	4.75
TOTAL	10.70	12.19	13.10	14.13	15.31
NET PROFIT	3.20	5.56	8.40	10.25	13.50
	4.07%	6.03%	7.97%	8.58%	9.95%
Taxation		0.06	0.45	0.68	1.35
PROFIT (After Tax)	3.20	5.50	7.95	9.57	12.15

5.6 Production and Yield

COMPUTATION OF PRODUCTION OF ICE CREAM

Items to be Manufactured

ICE CREAM

Machine capacity Per Day	500	KG
Total working Hours	10	
working days in a month	25	Days
working days per annum	300	
machine capacity per annum	150000	KG

Final Output

1 box size	750	Gram
ICE CREAM Boxes in a Day	667	Box
ICE CREAM Boxes Per Annum	200,000	Box

Production of ICE CREAM		
Production	Capacity	Boxes
1st year	50%	100,000
2nd year	55%	110,000
3rd year	60%	120,000
4th year	65%	130,000
5th year	70%	140,000

Raw Material Cost			
Year	Capacity Utilization	Rate (per KG)	Amount (Rs. in lacs)
1st year	50%	65.00	48.75
2nd year	55%	68.00	56.10
3rd year	60%	71.00	63.90
4th year	65%	75.00	73.13
5th year	70%	79.00	82.95

5.7 Sales Revenue

<u>COMPUTATION OF SALE</u>					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Op Stock	-	1,667	1,833	2,000	2,167
Production	100,000	110,000	120,000	130,000	140,000
Less : Closing Stock	1,667	1,833	2,000	2,167	2,333
Net Sale	98,333	109,833	119,833	129,833	139,833
sale price per 750 Gram Box	80.00	84.00	88.00	92.00	97.00
Sales (in Lacs)	78.67	92.26	105.45	119.45	135.64

5.8 Working Capital Assessment

(in Lacs)					
COMPUTATION OF CLOSING STOCK & WORKING CAPITAL					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
<u>Finished Goods</u>					
	1.10	1.24	1.40	1.59	1.78
<u>Raw Material</u>					
	0.81	0.94	1.07	1.22	1.38
Closing Stock	1.91	2.18	2.47	2.81	3.17

<u>COMPUTATION OF WORKING CAPITAL REQUIREMENT</u>					
TRADITIONAL METHOD					
(in Lacs)					
Particulars	Amount	Own Margin		Bank Finance	
Finished Goods & Raw Material	1.91				
Less : Creditors	0.81				
Paid stock	1.10	10%	0.11	90%	0.99
Sundry Debtors	3.15	10%	0.31	90%	2.83
	4.24		0.42		3.82
MPBF					3.82
WORKING CAPITAL LIMIT DEMAND (from Bank)					3.50
Working Capital Margin					0.39

5.9 Power, Salary & Wages Calculation

Utility Charges (per month)		
Particulars	value	Description
Power connection required	15	KWH
consumption per day	150	units
Consumption per month	3,750	units
Rate per Unit	10	Rs.
power Bill per month	37,500	Rs.

<u>BREAK UP OF LABOUR CHARGES</u>			
Particulars	Wages	No of	Total
	Rs. per Month	Employees	Salary
Skilled (in thousand rupees)	13,000	2	26,000
Unskilled (in thousand rupees)	8,000	2	16,000
Total salary per month			42,000
Total annual labour charges	(in lacs)		5.04

<u>BREAK UP OF Staff Salary CHARGES</u>			
Particulars	Salary	No of	Total
	Rs. per Month	Employees	Salary
helper	6,000	2	12,000
Accountant	15,000	1	15,000
Total salary per month			27,000
Total annual Staff charges	(in lacs)		3.24

5.10 Depreciation

COMPUTATION OF DEPRECIATION			(in Lacs)
Description	Plant & Machinery	Miss. Assets	TOTAL
Rate of Depreciation	15.00%	10.00%	
Opening Balance	-	-	-
Addition	21.00	1.00	22.00
Total	21.00	1.00	22.00
Less : Depreciation	3.15	0.10	3.25
WDV at end of Year	17.85	0.90	18.75
Additions During The Year	-	-	-
Total	17.85	0.90	18.75
Less : Depreciation	2.68	0.09	2.77
WDV at end of Year	15.17	0.81	15.98
Additions During The Year	-	-	-
Total	15.17	0.81	15.98
Less : Depreciation	2.28	0.08	2.36
WDV at end of Year	12.90	0.73	13.63
Additions During The Year	-	-	-
Total	12.90	0.73	13.63
Less : Depreciation	1.93	0.07	2.01
WDV at end of Year	10.96	0.66	11.62
Additions During The Year	-	-	-
Total	10.96	0.66	11.62
Less : Depreciation	1.64	0.07	1.71
WDV at end of Year	9.32	0.59	9.91

5.11 Repayment schedule

REPAYMENT SCHEDULE OF TERM LOAN							
						Interest	11.00%
Year	Particulars	Amount	Addition	Total	Interest	Repayment	Closing Balance
1st	Opening Balance						
	1st month	-	12.10	12.10	-	-	12.10
	2nd month	12.10	-	12.10	0.11	-	12.10
	3rd month	12.10	-	12.10	0.11	-	12.10
	4th month	12.10	-	12.10	0.11		12.10
	5th month	12.10	-	12.10	0.11		12.10
	6th month	12.10	-	12.10	0.11		12.10
	7th month	12.10	-	12.10	0.11	0.22	11.88
	8th month	11.88	-	11.88	0.11	0.22	11.65
	9th month	11.65	-	11.65	0.11	0.22	11.43
	10th month	11.43	-	11.43	0.10	0.22	11.20
	11th month	11.20	-	11.20	0.10	0.22	10.98
	12th month	10.98	-	10.98	0.10	0.22	10.76
					1.19	1.34	
2nd	Opening Balance						
	1st month	10.76	-	10.76	0.10	0.22	10.53
	2nd month	10.53	-	10.53	0.10	0.22	10.31
	3rd month	10.31	-	10.31	0.09	0.22	10.08
	4th month	10.08	-	10.08	0.09	0.22	9.86
	5th month	9.86	-	9.86	0.09	0.22	9.64
	6th month	9.64	-	9.64	0.09	0.22	9.41
	7th month	9.41	-	9.41	0.09	0.22	9.19
	8th month	9.19	-	9.19	0.08	0.22	8.96
	9th month	8.96	-	8.96	0.08	0.22	8.74
	10th month	8.74	-	8.74	0.08	0.22	8.51
	11th month	8.51	-	8.51	0.08	0.22	8.29
	12th month	8.29	-	8.29	0.08	0.22	8.07
					1.05	2.69	
3rd	Opening Balance						
	1st month	8.07	-	8.07	0.07	0.22	7.84
	2nd month	7.84	-	7.84	0.07	0.22	7.62
	3rd month	7.62	-	7.62	0.07	0.22	7.39
	4th month	7.39	-	7.39	0.07	0.22	7.17
	5th month	7.17	-	7.17	0.07	0.22	6.95
	6th month	6.95	-	6.95	0.06	0.22	6.72
	7th month	6.72	-	6.72	0.06	0.22	6.50
	8th month	6.50	-	6.50	0.06	0.22	6.27
	9th month	6.27	-	6.27	0.06	0.22	6.05
	10th month	6.05	-	6.05	0.06	0.22	5.83

	11th month	5.83	-	5.83	0.05	0.22	5.60
	12th month	5.60	-	5.60	0.05	0.22	5.38
					0.75	2.69	
4th	Opening Balance						
	1st month	5.38	-	5.38	0.05	0.22	5.15
	2nd month	5.15	-	5.15	0.05	0.22	4.93
	3rd month	4.93	-	4.93	0.05	0.22	4.71
	4th month	4.71	-	4.71	0.04	0.22	4.48
	5th month	4.48	-	4.48	0.04	0.22	4.26
	6th month	4.26	-	4.26	0.04	0.22	4.03
	7th month	4.03	-	4.03	0.04	0.22	3.81
	8th month	3.81	-	3.81	0.03	0.22	3.59
	9th month	3.59	-	3.59	0.03	0.22	3.36
	10th month	3.36	-	3.36	0.03	0.22	3.14
	11th month	3.14	-	3.14	0.03	0.22	2.91
	12th month	2.91	-	2.91	0.03	0.22	2.69
					0.46	2.69	
5th	Opening Balance						
	1st month	2.69	-	2.69	0.02	0.22	2.46
	2nd month	2.46	-	2.46	0.02	0.22	2.24
	3rd month	2.24	-	2.24	0.02	0.22	2.02
	4th month	2.02	-	2.02	0.02	0.22	1.79
	5th month	1.79	-	1.79	0.02	0.22	1.57
	6th month	1.57	-	1.57	0.01	0.22	1.34
	7th month	1.34	-	1.34	0.01	0.22	1.12
	8th month	1.12	-	1.12	0.01	0.22	0.90
	9th month	0.90	-	0.90	0.01	0.22	0.67
	10th month	0.67	-	0.67	0.01	0.22	0.45
	11th month	0.45	-	0.45	0.00	0.22	0.22
	12th month	0.22	-	0.22	0.00	0.22	-
					0.16	2.69	
	DOOR TO DOOR	60		MONTHS			
	MORATORIUM PERIOD	6		MONTHS			
	REPAYMENT PERIOD	54		MONTHS			

5.12 DSCR

CALCULATION OF D.S.C.R					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	6.45	8.27	10.31	11.58	13.86
Interest on Term Loan	1.19	1.05	0.75	0.46	0.16
Total	7.64	9.32	11.06	12.03	14.02
REPAYMENT					
Instalment of Term Loan	1.34	2.69	2.69	2.69	2.69
Interest on Term Loan	1.19	1.05	0.75	0.46	0.16
Total	2.53	3.74	3.44	3.14	2.85
DEBT SERVICE COVERAGE RATIO	3.02	2.49	3.22	3.83	4.92
AVERAGE D.S.C.R.	3.49				

5.13 Break Even Point Analysis

BREAK EVEN POINT ANALYSIS					
Year	I	II	III	IV	V
Net Sales & Other Income	78.67	92.26	105.45	119.45	135.64
Less : Op. WIP Goods	-	1.10	1.24	1.40	1.59
Add : Cl. WIP Goods	1.10	1.24	1.40	1.59	1.78
Total Sales	79.76	92.41	105.61	119.63	135.83
Variable & Semi Variable Exp.					
Raw Material Consumed	48.75	56.10	63.90	73.13	82.95
Electricity Exp/Coal Consumption at 85%	3.83	4.40	5.06	5.82	6.40

Wages & Salary at 60%	4.97	5.46	6.01	6.61	7.27
Selling & administrative Expenses 80%	1.83	2.58	2.95	3.34	3.80
Interest on working Capital	0.385	0.385	0.385	0.385	0.385
Repair & maintenance	1.97	2.31	2.64	2.99	3.39
Packaging	2.36	2.77	3.16	3.58	4.07
Total Variable & Semi Variable Exp	64.08	74.01	84.11	95.85	108.27
Contribution	15.68	18.40	21.50	23.78	27.57
Fixed & Semi Fixed Expenses					
Electricity Exp/Coal Consumption at 15%	0.68	0.78	0.89	1.03	1.13
Wages & Salary at 40%	3.31	3.64	4.01	4.41	4.85
Interest on Term Loan	1.19	1.05	0.75	0.46	0.16
Depreciation	3.25	2.77	2.36	2.01	1.71
Selling & administrative Expenses 20%	0.46	0.65	0.74	0.84	0.95
Rent	3.60	3.96	4.36	4.79	5.27
Total Fixed Expenses	12.48	12.84	13.10	13.53	14.07
Capacity Utilization					
	50%	55%	60%	65%	70%
OPERATING PROFIT	3.20	5.56	8.40	10.25	13.50
BREAK EVEN POINT	40%	38%	37%	37%	36%
BREAK EVEN SALES	63.48	64.48	64.35	68.05	69.32

6. LICENSE & APPROVALS

- Obtain the GST registration.
- Additionally, obtain the Udyog Aadhar registration Number.
- Fire/pollution license as required.
- FSSAI License
- Choice of a Brand Name of the product and secure the name with Trademark if required.

Implementation Schedule

S.N.	Activity	Time Required (in Months)
1	Acquisition Of premises	1-2
2	Procurement & installation of Plant & Machinery	1-2
3	Arrangement of Finance	1-2
4	Requirement of required Manpower	1
	Total time Required (some activities shall run concurrently)	5-6 Months

7. ASSUMPTIONS

1. Production Capacity of Ice cream is 500 KG per day. First year, Capacity has been taken @ 50%.
2. Working shift of 10 hours per day has been considered.
3. Raw Material stock is for 5 days and finished goods Closing Stock has been taken for 5 days.
4. Credit period to Sundry Debtors has been given for 12 days.
5. Credit period by the Sundry Creditors has been provided for 5 days.
6. Depreciation and Income tax has been taken as per the Income tax Act, 1961.
7. Interest on working Capital Loan and Term loan has been taken at 11%.
8. Salary and wages rates are taken as per the Current Market Scenario.
9. Power Consumption has been taken at 15 KW.
10. Selling Prices & Raw material costing has been increased by 5% & 5% respectively in the subsequent years.

Limitations of the Model DPR and Guidelines for Entrepreneurs

Limitations of the Model DPR

- i. This model DPR has provided only the basic standard components and methodology to be adopted by an entrepreneur while submitting a proposal under the Formalization of Micro Food Processing Enterprises Scheme of MoFPI.
- ii. This is a model DPR made to provide general methodological structure not for specific entrepreneur/crops/location. Therefore, information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of his business, details of proposed DPR, project location, raw material base/contract sourcing, entrepreneurs own SWOT analysis, detailed market research, rationale of the project for specific location, community advantage/benefit from the project, employment generation and many more detailed aspects not included.
- iii. The present DPR is based on certain assumptions on cost, prices, interest, capacity utilization, output recovery rate and so on. However, these assumptions in reality may vary across places, markets and situations; thus the resultant calculations will also change accordingly.