

Detailed Project Report
on
Establishment of a Bakery Unit
by
PACS

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Abbreviations

AC	Air Conditioner
CAGR	Compound Annual Growth Rate
CU	Capacity Utilization
DCCB	District Central Cooperative Bank
DSCR	Debt-Service Coverage Ratio
FSSAI	Food Safety and Standards Authority of India
GoI	Government of India
GST	Goods and Service Tax
HTCL	Haryana Tourism Corporation Limited
IBRTC	International Bakery Research & Training Centre
IRR	Internal Rate of Return
ISO	International Organization for Standardization
MoFPI	Ministry of Food Processing Industries
NCDC	National cooperative Development Corporation
NCR	National Capital Region
NIFTEM	National Institute of Food Technology Entrepreneurship and Management
PACS	Primary Agriculture Cooperative Societies
RO	Reverse Osmosis
SKU	Stock Keeping Unit

Introduction

Bakery products, due to high nutrient value and affordability, are an item of huge consumption. Due to the rapid population rise, the rising foreign influence, the emergence of a female working population and the fluctuating eating habits of people, they have gained popularity among people, contributing significantly to the growth trajectory of the bakery industry. A number of healthy products have been launched in the bakery segment and are gaining popularity at a high rate.

The Indian bakery industry is one of the biggest sections in the country's processed food industry. Bakery products, which include bread and biscuits, form the major baked foods accounting for over 82 per cent of the total bakery products produced in the country. It enjoys a comparative advantage in manufacturing, with an abundant supply of primary ingredients required by the industry, and is the third-largest biscuit manufacturing country (after the United States and China). The bakery segment in India can be classified into the three broad segments of bread, biscuits and cakes. India's organised bakery sector produces about 1.3 million tonnes of bakery products out of 3 million tonnes while the balance is produced by unorganised, small-scale local manufacturers.

Despite the fact that there are many automatic and semi-automatic bread and biscuit manufacturing units in India, many people still prefer fresh bread and other products from the local bakery. The popular biscuit variants in India are glucose biscuits, Marie, cream biscuits, crackers, digestive biscuits, cookies and milk biscuits.

As far as the Indian biscuit market is concerned, the shares of the branded and organised sector and the unbranded and unorganised sectors are 60 per cent and 40 per cent respectively. Indian bakery products, especially biscuits, are in great demand in developing countries.

Baked goods are expected to grow by constant value at a compound annual growth rate (CAGR) of two per cent over the forecast period. The bakery industry in India has witnessed an annual growth rate of more than 15 per cent during the past years. As the business and the industry thrives, the challenges accruing out of it are also growing expediently.

Like many industries, retail bakeries see rising costs in fuel, healthcare and other expenditures cut into their bottom lines and increase the costs of doing business. Driven by the evolving perception of bakery products in India and the changing consumer preferences, the Indian bakery industry would touch levels of Rs. 500 billion in the next five years.

SAMPLE

Project Profile

Vision: To establish a bakery unit which can enhance the PACS income by 40% after value addition in wheat.

Mission: To mobilize the idle resources of PACS and to involve women members in productive economic activities.

Objectives: The project is to be considered to achieve the following objectives:

- To generate employment in PACS by production activity
- Provide financial benefits to member farmers of the PACS
- Develop an attitude of business in PACS.
- Women empowerment by generating employment for women
- To utilise idle land resources of the PACS and make them business generation entity.

The Proposal

It is proposed here to manufacture khari (bakery puffed biscuits), rusk (toast) and Aata biscuits with an installed capacity of total 500 kg/day, in which, 20% khari, 40% rusk and 40% assorted bakery Atta biscuits.

Business Model

<p>Key Partners</p> <ul style="list-style-type: none"> ➤ Members of the PACS of Haryana- for providing raw material ➤ NCDC ➤ DCCB ➤ Machinery, repairs and ingredient suppliers 	<p>Key Activities</p> <ul style="list-style-type: none"> ➤ Production ➤ Inventory Management ➤ Sales and Marketing 	<p>Value Proposition</p> <ul style="list-style-type: none"> ➤ Provide Customers healthy and digestive atta biscuits ➤ Crispy and nutritional ingredient ➤ Availability of product on demand 	<p>Customer Relationships</p> <ul style="list-style-type: none"> ➤ Long term relationship to sustain in the market ➤ Maintain hygienic production 	<p>Customer Segments</p> <ul style="list-style-type: none"> ➤ High income Group of Delhi – NCR and Chandigarh ➤ Villagers of the PACS ➤ Tourists ➤ Students
<p>Cost Structure</p> <ul style="list-style-type: none"> ➤ Fixed Cost for Plant and Machinery ➤ Attractive Packaging ➤ Distribution and Sales ➤ Cost for product replacement in case of packets are braked. 		<p>Revenue Streams</p> <ul style="list-style-type: none"> ➤ Value added product generate revenue ➤ Products are produced as per market segments- High, Middle, Low level income group and occasional customers. ➤ Prices are little lower than competitors. 		

Project Details

Assumptions

1. The Project Profile has been prepared on the basis of Single Shift of 8 hours a day and 300 working days in a year at 80% efficiency.
2. It is presumed that in the first year, the capacity utilization (CU) will be 70% followed by 75%, 80%, 85% and 90% onwards in the subsequent years.
3. Raw material consumption is 80% for first year then 90% and after that 100% in subsequent years.
4. For Calculation purpose CU is adjusted in hike of raw material cost too.
5. The selling price of the products is kept fixed for calculation purpose.
6. The rate of salaries and wages for skilled workers and others are on the basis of the minimum rates in the State of Haryana.
7. The PACS have Land and Building and have sufficient amount of primary raw material i.e. Wheat.
8. The flour machine and RO water plant is already installed in the PACS.
9. The payback period may be 5-years after the initial gestation period.
10. The gestation period in implementation of the project may be to the tune of 6 to 9 months which includes making all arrangements, completion of all formalities, market surveys and tie-ups etc.

Implementation schedule

The implementation of the project includes various jobs/exercises such as procurement of technical know-how, market surveys and tie-ups, preparation of project report, selection of site, registration, financing of project, procurement of machinery and raw materials etc., recruitment of staff, erection/ commissioning of machines, trial production and commercial production etc. In order to efficiently and successfully implement the project in the shortest period, simultaneous exercises are carried out. Project implementation will take a period of 8 months from the date of approval of the scheme. Breakup of activities with relative time for each activity is shown below:-

Activity	Period (In Months)
Scheme Preparation and approval	0-1
SSI Provisional Registration	1-2
Sanction of loan	2-5
Clearance from State Pollution Control Board	3-4
Placement of order for machinery and delivery	4-5
Installation of machines	6-7
Power connection	6-7
Trial run	7-8
Commencement of Production	9 onwards

Statutory & Government Approvals

It is mandatory for the bakeries to acquire licenses from FSSAI, GST, Local Municipality, Police Eating House, Fire Department and State Pollution Control Board. Out of these, the FSSAI, GST and local Municipal Health permits are of priority before starting the unit.

Manufacturing Process

KHARI

Weigh all ingredients as per formula. Make soft dough in a dough kneader still it becomes smooth and glossy. Roll the dough into sheets of required dimensions and thickness, apply flour dusting as required. Apply ghee on layers and fold it still of required size. Repeat the process still layers are formed. Refrigerate it for 15 minutes. Remove from refrigerator, cut into pieces of required size and dimensions. Place all the pieces in baking oven and bake at 200 °C 20-25 minutes. After that lower the temperature and bake at 180° C for another 15-20 minutes. Cool the pieces, pack as per weight decided of SKU into poly bags and then put into corrugated carton for dispatch.

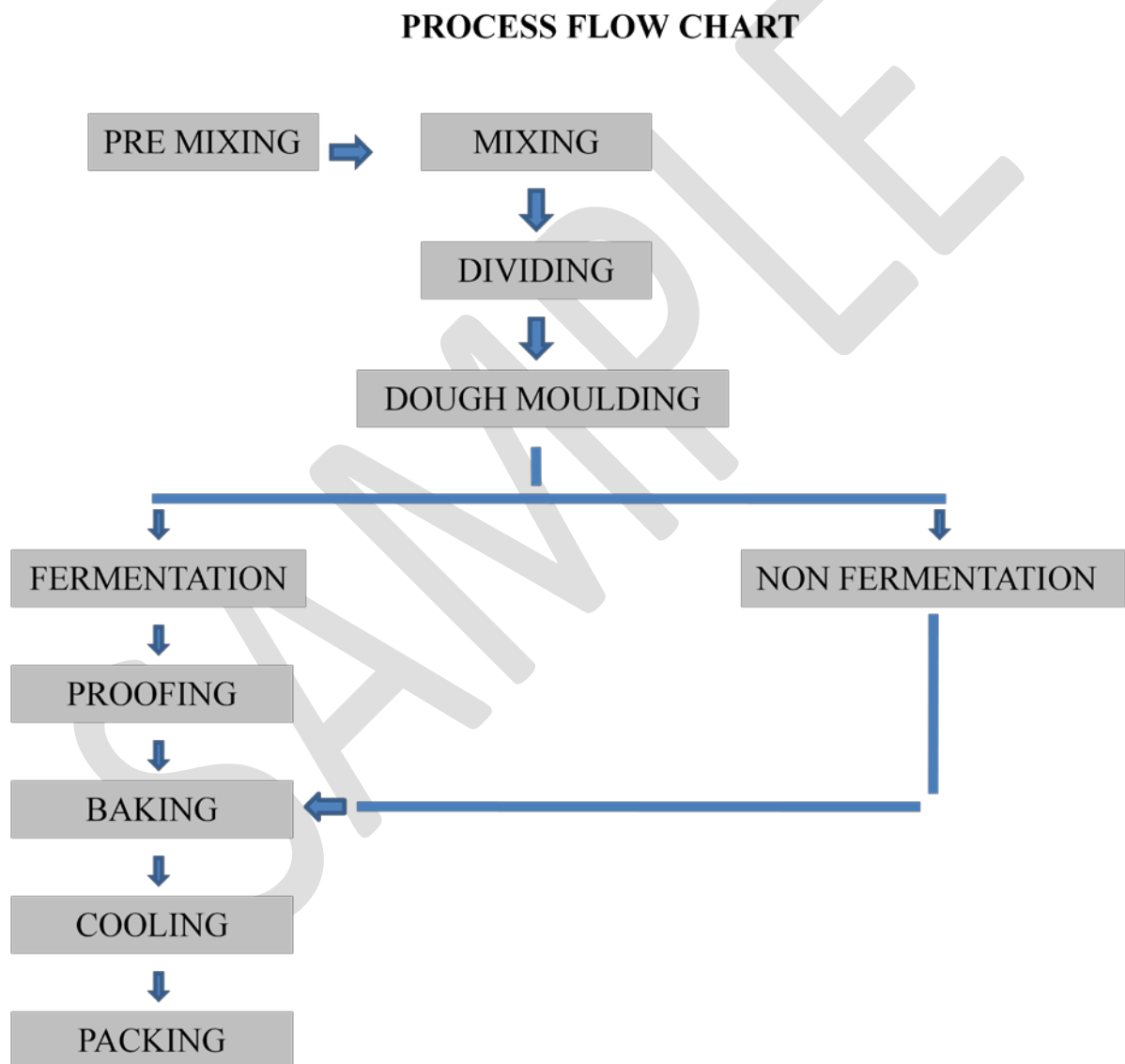
RUSK (TOAST)

Pre-mixing of ingredients as per formulation to form dough of proper consistency. The dough is then divided and pieces put into moulds for proofing, followed by first baking, cooling, second baking and again cooling and packing. First baking to do at 200° C and second baking at 180° C.

ATTA BUISCUIT

Weigh all ingredients and make soft dough with addition of sugar, ghee and water as per formula. Beat the dough still it becomes soft and fluffy. Add yoghurt and beat again. Keep it in such condition for 10-15 min. Press the dough into flatten rounds and make incision with knife at centre. Sprinkle cardamom, coconut or sesame seeds just for decoration. Bake the rounds at 200° C for 20-25 minutes.

Process flow Chart



Financial Statements

Project Financing

1. Cost of the Project

Sl. No.	Heads	Amount
1	Land	Own
2	Building	Own
3	Plant & Machinery*	40,00,000
4	Contingency	8,00,000
5	Other capital Investment	12,00,000
	Total	60,00,000

* Machinery Particulars are as under:

Sl. No.	Equipment	Quantity	Rate (Rs./Unit)	Total Amount (Rs.)
1	Baking Ovens	4	1,25,000	5,00,000
2	Dough Mixers	2	1,00,000	2,00,000
3	Cutter, Divider, Sheeter	3	3,00,000	9,00,000
4	Rusk Making Machine	1	1,00,000	1,00,000
5	Flour Sifter, Sugar Pulveriser, Biscuit Grinder	3	80,000	2,40,000
6	Trays, Scoops, SS Bins, Pellets,	1	60,000	60,000
7	Packing Equipment	2	3,00,000	6,00,000
8	Miscellaneous Equip: Small RO Plant, small flour mill	-	-	15,00,000
	Total			40,00,000

Note: The rate may vary as per market

2. Working Capital Requirement

(i) Raw Material

Ingredients	Qty./yr. MT	Rate/MT	Amount
Maida/Atta	120	Own	Own
Ghee	55	1,00,000	55,00,000
Edible oil	7	1,20,000	8,40,000
Sugar	4	30,000	1,20,000
Salt	2	10,000	20,000
Other Ingredient	6	1,00,000	6,00,000
Packaging Material	-	-	2,40,000
Total			73,20,000

(ii) Manpower Requirement

Particular	Number of Employees	Salary/ Wages Per month	Amount per month	Total Amount Per year
Technical Staff	3	12,000	36,000	4,32,000
Admn. Staff	3	12,000	36,000	4,32,000
Marketing Staff	6	10,000	60,000	7,20,000
Labour	10	8,000	80,000	9,60,000
Total			2,12,000	25,44,000

Note: The rates are taken in round figure for the ease of calculation.

Business Projections

Installed plant capacity = 500 Kg/day

Efficiency @ 80% = 400 Kg/day

Production for 300 working days = 1, 20,000 kg

Sales

Khari @ 20% @Rs. 100/ Kg = Rs. 24,00,000/-

Rusk @ 40% @ Rs. 120/Kg = Rs. 57,60,000/-

Atta Biscuits @ 40% @ Rs. 150/Kg = Rs. 72,00,000/-

Total sales = Rs. 1,53,60,000/-

Since capacity utilization (CU) is taken different for different years therefore, projected sales will be:

Year	1	2	3	4	5	6
CU @	70%	75%	80%	85%	90%	90%
Sales	10752000	11520000	12288000	13056000	13824000	13824000

Cash Flow

Project Cost				Rs	60.000	lakhs
Promoter's Capital				Rs.	30.000	lakhs
Loan from NCDC @ 11.10%				Rs	20.000	lakhs
Subsidy from MoFPI @ 25% of the plant and machinery				Rs	10.000	lakhs
Total Assistance				Rs	30.000	lakhs
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
CU	70%	75%	80%	85%	90%	90%
Sales	10752000	11520000	12288000	13056000	13824000	13824000
Expenses						
raw material	5856000	6588000	7320000	7320000	7320000	7320000
salary	2544000	2544000	2544000	2544000	2544000	2544000
other expenses @ 10% of sales (electricity, insurance and others)	1075200	1152000	1228800	1305600	1382400	1382400
depreciation @ 10%	400000	400000	400000	400000	400000	400000
Loan due	2000000	1666666	1333333	1000000	666667	333333
Interest on Term loan	222000	185000	148000	111000	74000	37000
Loan instalments	333333	333333	333333	333333	333333	333333
Total Expences	10430533	11202333	11974133	12013933	12053733	12016733
Gross Profit	321467	317667	313867	1042067	1770267	1807267
tax @ 10%	32147	31767	31387	104207	177027	180727
Net Profit	289320	285900	282480	937860	1593240	1626540

Feasibility Assessment

Technical

- Raw Material for this business is wheat, which is readily available in PACS.
- The machines and equipments are not very costly so it can be easily affordable.
- The machines and equipments become semi/fully automatic so operation is an easier task.
- The manufacturers of different machines also provide the facility of installation and repair service for free.
- PACS have large storage area and big godowns for storage of raw materials and finished bakery products.

Socio – Economic

- Bakery unit can generate extra income to PACS members and upgrade their socio-economic status.
- Youth of PACS villages can be employed here and it will create the employment opportunity to young persons.
- People can be trained as a salesman, machine operator or manager.
- The entrepreneurial zeal and managerial skills of village women will be used which otherwise wasted.
- The entrepreneurial and managerial skills will be developed in PACS members.
- Idle resources can be turned into profitable one.

Market

- There is always a place of Rusk, Khari & Biscuits in all retail shop. So these products have good market potential always.
- Haryana is a developed state of India. The people of Haryana love the deshi products. Bakery being pure deshi product has market throughout the Haryana.
- Mall culture is spread all over Haryana. In the big cities the bakery products can be placed in malls and organized retail shops.

- Big Bazars and other big retail stores can be approached to sell these products.
- Proximity to Delhi – NCR and Chandigarh is on advantage to PACS of Haryana. The people of these cities are health conscious and they are ready for pay for good bakery products.
- PACS itself has a market for the products. Every PACS almost contain 8-10 villages so the PACS can put the products in shops of its villages too.
- Khari and Rusk are treated as a product of foreign touch. The population of Chandigarh and Delhi NCR, who has to use these products, may create a good potential.

Financial

Bakery products are value added products. These have higher value (price) than that of raw materials. The financial aspects are elaborated in Annexures – attached.

This business have **IRR 22%** and **DSCR = 2.95**.

So, this project is financially viable.

SWOT Analysis

Strengths

- The PACS of Haryana have ample amount of wheat throughout the year.
- PACS have enough area of operation and ample storage space is available.
- The labour and raw material is easily available for PACS.
- Since Haryana is located near Delhi and Chandigarh so healthy bakery products are in high demand especially atta biscuit which is easily digestible.
- Low Capital Requirements for this business.

Weakness

- Bakery products are perishable items.
- Sensitive to commodity price fluctuations.
- Scarcity of Skilled Human Resource
- Lack of experienced staff

Opportunities

- The increasing township and mall culture have created market potential for bakery products.
- Haryana have different stores located at bus stops (especially for AC busses) where these products can be sold to passengers.
- The nutritional value and attractive packaging of the products can also create an opportunity.
- The High income group having lavish living standard have passion to use bakery products instead of packaged products available in market.
- The fooding habit of villagers are also been changed and they are also a good consumer of bakery products.

Threats

- Tough competition with other big brands
- Price wars among competitors
- Product Substitution
- Technology Up gradation

Risk Assessment & Management

- Bakery products are **perishable** in nature; therefore Material management is required for avoidance of the wastage.
- There is a tough **competition** in the market so product mix approach is applicable to this industry. PACS should produce quality products to sustain in the market.
- Proper study of **consumer behaviour** should be conducted and accordingly the products can be produced.
- The **shelf value** of these products is very less therefore demand for these products can be generated through proper advertisement and promotion.
- The financing of these types of industries depends on the market factors, though demand for these products are high but financial institution does not easily finance these products. The financing agency must be ensured through a proper business plan.
- The **packaging** of product should be attractive. It creates additional demand for products.
- Proper certification of plant is required from the authorities. **Food safety standards** should be followed.
- PACS may approach for **ISO** certification for ensuring the quality standards of products.
- Internal **Checklist** should be in plant / unit and it must be supervised periodically.
- **Waste disposal** - The main waste in the bakery unit is of unused dough, fondant, burnt product. These need to be removed in a timely manner. Dough and fondant may lead to fungal growth in the manufacturing premises, whereas burnt product will contaminate the finished product. Waste should be disposed immediately in covered bins to avoid contamination.

Training & Development

National Institute of Food Technology Entrepreneurship and Management (NIFTEM) located at Sonapat district of Haryana, is an autonomous institution under Ministry of food Processing Industries, Government of India. This institute offers short term training programmes and workshops on bakery. The PACS may approach to this institute and provide training to its employees on bakery processing at nominal fees.

International Bakery Research & Training Centre (IBRTC) is opened in the NIFTEM to undertake the work of training, teaching, research and technology transfer in the area of: Science of Baking, Bakery Machinery, Hygiene and Sanitation, Bakery Management, Production Method, New Product Development, Quality Control and Specification, Packaging and Presentation of Products.

Apart from this there are several private institutes also which provide training and skill development in bakery and food processing. These institutes are located in Ambala, Karnal, Chandigarh, Hisar.

Monitoring and Control

- Making bakery products experienced skilled worker or qualified baker is needed to check raw material quality, dough consistency, proofing, first and second baking, etc.
- It is necessary to develop right taste, texture and consistency of the products.
- It is necessary to avoid waste during flour shifting, dough making, rolling/sheeting, slicing/cutting etc. Because wastage increase the cost as well disposal of it also cost.
- Proper selection of bakery equipment is very much essential.
- Water must be of good quality, preferably RO water if total dissolved solids are high in source water.
- Disposal of solid and liquid waste are to work out properly as per pollution laws.
- Good level of competence is needed to understand quality of raw materials, formulation of products, functions of additives used in formulation, control of process and machinery to produce end product of desired quality, taste and texture, type of packing material to be used, market trends and penetration, etc.
- Technical knowledge and skills are needed for problem solving, and to ensure good hygiene and safety in the workplace.
- Proper pest control is required for preventing insects and rodents.
- The guidelines listed in FSSAI manual should be followed strictly.

Conclusion

Bakery products still remain the cheapest of the processed ready to eat products in the country. The demand for bakery products will continue to increase in future.

Bakery products are becoming quite popular in rural areas as well. Nearly 55% of the biscuits are consumed by rural sector. The higher consumption of biscuits in rural area could be attributed to its position as a snack, longer shelf life and better taste which is liked by different cross sections of population. There is no marketing problem as every shop is a market for bakery products.

Bakery business is like venturing into spreading your labour of love. A love that is devoured by millions for its freshness & taste and the warmth that it leaves behind.

*“If baking is any labour at all, it’s a labour of love.”
– Regina Brett*

Annexure
Financial Analysis & Ratios

Calculation of IRR							
Year	1	2	3	4	5	6	Total
Surplus	289320	285900	282480	937860	1593240	1626540	5015340
Dis. @ 20%	0.833	0.694	0.579	0.482	0.402	0.334	
NPV @ 20%	241003.56	198414.6	163555.92	452048.52	640482.48	543264.36	2238769.44
Dis. @25%	0.8	0.64	0.512	0.4096	0.3277	0.2621	
NPV @ 25%	231456	182976	144629.76	384147.456	522104.748	426316.134	1891630.098
Dis. @30%	0.769	0.591	0.455	0.35	0.269	0.207	
NPV @ 30%	222487.08	168966.9	128528.4	328251	428581.56	336693.78	1613508.72
Dis. @ 40 %	0.714	0.51	0.34	0.26	0.186	0.132	
NPV @40%	206574.48	145809	96043.2	243843.6	296342.64	214703.28	1203316.2

IRR = 22%

Calculation of DSCR

Project Cost				Rs	60.000	lakhs
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Net Profit	289320	285900	282480	937860	1593240	1626540
ICR = Profit before depreciation interest and tax/interest	3.249851351	3.879283033	4.823427132	12.99159459	29.32791727	59.65592552
Profit After Tax+Depreciation+interest	911320	870900	830480	1448860	2067240	2063540
Interest +installment of term loan	555333	518333	481333	444333	407333	370333
DSCR= (Profit After Tax+Depreciation+interest)/(Interest +installment of term loan)	1.641033938	1.680194811	1.725375904	3.260753309	5.075061721	5.572121584

Average DSCR = 8192340/2776998 = 2.95