

11. PROFILE ON BISCUIT PRODUCTION

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I. SUMMARY

This profile envisages the establishment of a plant for the production of biscuit with a capacity of 1,500 tonnes per annum.

The present demand for the proposed product is estimated at 14,798 tonnes per annum. The demand is expected to reach at 20,141 tonnes by the year 2020.

The plant will create employment opportunities for 19 persons.

The total investment requirement is estimated at about Birr 16.19 million, out of which Birr 6.8 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 15 % and a net present value (NPV) of Birr 5 million discounted at 8.5%.

II. PRODUCT DESCRIPTION AND APPLICATION

Biscuits are food items with greater nutritive value than plain bread of equal weight. Biscuits are classified as hard, soft and “batter” biscuits.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

Biscuit is a family of the candy group which is largely consumed by children and teenagers. Biscuits can be savory, sweet, plain – baked, filled or coated (or a mixture of several of these options). Some biscuits supply special dietary needs, such as those for high fibre, protein or extra vitamins (as in infant rusks). Biscuits also contain fat and

often sugar, and are cut or moulded into thin layers and baked rapidly and thoroughly. If packed in a moisture proof material, biscuits can have a long shelf life.

In every village in urban as well as rural areas where there are shops there are one or two types of biscuits on the shelf. Biscuits are very popular for they are sweet and ready to be served and above all affordable. Biscuits are, therefore, in demand both in urban and rural areas. With the growth in population and income there is potential market for the product in a country of 77 million population.

Local producers of biscuits are flourishing. Some are said to be running at their capacity and with out keeping stocks since what is produced is directly delivered to the market. Unlike other domestic products, biscuits of local origin are competing and growing their market share significantly. Among the local producers Nas, Brothers... and from the imported biscuits the Yemeni Abuwold - a well established brand in the market: are the leaders in the market. Taking into account more than 260 fasting days per year by Orthodox Christians, fasting biscuits are also produced so that throughout the year manufacturers are providing continuous supply. The general situation in the market for biscuits is going towards full fledged competition through brand development, range of products, delivery, advertisements like packaging.

The average domestic production of biscuits in 1997-2004 was 9,084 tonnes per year while at the same period the country imported 2,995 tonnes of biscuits. As shown in Table 3.1 unless for high quality biscuit products, domestic manufacturers are demonstrating their competitiveness. In total the average supply of biscuits in the period 1997-2004 was 12,079 tonnes.

Table 3.1
SUPPLY OF BISCUITS IN TONNES

Year	Domestic Production	% share	Import	% share	Total
1997	6,694	90	703	10	7,397
1998	10,587	82	2,368	18	12,955
1999	9,080	89	1,104	11	10,184
2000	11,781	87	1,707	13	13,488
2001	16,607	91	1,688	9	18,295
2002	4,925	24	15,429	76	20,354
2003	5,639	86	917	14	6,556
2004	7,361	99	44	1	7,405
Average	9,084	81	2,995	19	12,079

Sources: Customs Authority, for Import CSA, For domestic production.

Applying the 2000-2004 GDP growth rates, i.e., 7 % and taking the average supply during the period of analysis as a base, the current effective demand for biscuits is estimated at 14,798 tonnes.

2. Projected Demand

The demand for biscuits is dependent on size of population. Since the product is consumed by the lower and middle class of the population and food is the first priority, income has less effect on the demand. Therefore, the demand for biscuit is projected based on the annual population growth rate of 2.4%. The total projected demand, existing supply and unsatisfied demand is presented in Table 3.2.

Table 3.2
PROJECTED DEMAND, DOMESTIC SUPPLY AND UNSATISFIED DEMAND
FOR BISCUITS (TONNES)

Year	Total Projected Demand	Domestic Supply	Unsatisfied Demand
2008	15,153	9084	6,069
2009	15,516	9084	6,432
2010	15,889	9084	6,805
2011	16,270	9084	7,186
2012	16,661	9084	7,577
2013	17,060	9084	7,976
2014	17,470	9084	8,386
2015	17,889	9084	8,805
2016	18,319	9084	9,235
2017	18,758	9084	9,674
2018	19,208	9084	10,124
2019	19,669	9084	10,585
2020	20,141	9084	11,057

3. Pricing and Distribution

The price of biscuits varies as the brands in the market and their contents and packaging are also different. The present retail prices of some of the brands in the market are listed in Table 3.3.

Table 3.3
CURRENT RETAIL PRICE OF BISCUITS OF DIFFERENT BRANDS

Brand	Unit	Price
Nas	100gm	1.00
Brother	75gm	1.25
Lovely	100gm	0.75
Abuwolled	80gm	1.00

Taking the competition from local producers in the market and margin for wholesalers and distributors in to account, the recommended price for the new project is Birr 0.80/100gm.

Distribution has a major role for the success of the new brand. Keeping good quality and competitive prices are not enough to have a good share of the market. As a new entrant the product under study should be advertised intensively through media as well as posters which should reach the village shops to create awareness of the arrival at the new product should be used.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

Based on the market study, the envisaged biscuit plant will have annual production capacity of 1,500 tonnes. The plant will operate in a single shift, 8 hours a day, and for 300 days a year.

2. Production Programme

Production will commence at 75%, and then will grow to 85% and 100% in the second year, and the third year and then after, respectively. Detail production programme is shown in Table 3.4 below.

Table 3.4
PRODUCTION PROGRAMME

Year	1	2	3-10
Capacity utilisation (%)	75	85	100
Production (tons)	1125	1275	1500

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

Various types of biscuits do exist depending on the ingredients used and manufacturing process employed. The envisaged plant will produce hard biscuit. The raw materials used to produce hard biscuit are wheat flour, sugar, shortening, salt, Sal volatile, sweet jelly, glucose, and starch. The plant also needs packing materials like pp film and cartoon. Annual consumption of raw and auxiliary materials at full production capacity is given in Table 4.1 below. The total cost of raw and auxiliary materials is estimated at Birr 7,858.3 thousands, out of which Birr 1746.2 is required in foreign currency.

Table 4.1
RAW AND AUXILIARY MATERIALS REQUIREMENT
AND COST AT FULL PRODUCTION CAPACITY (TONNES)

Sr. No.	Description	Qty	Cost ['000 Birr]		
			LC	FC	TC
1	Flour	1,188	3,564	-	3,564
2	Sugar	247.5	1,609	-	1,609
3	Shortening	67.5	270	1,080	1,350
4	Salt	8.1	8.1	-	8.1
5	Sal volatile(carb.ammonium)	11.1	10	39.8	49.8
6	Sweet jelly	21.6	129.6	518.4	648
7	Glucose	13.5	27	108	135
8	Starch	32.4	194.4	-	194.4
5	Wrapping & packing materials	lump sum	300	-	300
	Grand Total		6,112.1	1,746.2	7,858.3

B. UTILITIES

Electricity and water are the utilities required by the envisaged plant. Details of utilities are shown in Table 4.2. The total cost of utilities is estimated at Birr 543,004.

Table 4.2
UTILITIES REQUIREMENT AND COST

Sr. No.	Description	Qty.	Unit price (Birr)	Total Cost, Birr
1	Electricity (kWh)	1,140,000	0.4736	539,904
2	Water (m ³)	1000	3.10	3100
	Grand Total			543,004

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The production process involves the following unit operations; raw material preparation, dough mixing, laminating, cutting/moulding, baking, cooling, stacking and packing.

All materials except flour are preparatory mixed in a certain cream mixer. Materials used at this stage are sugar, shortening, salt, millet jelly, glucose, starch etc. Materials pre-mixed in the previous stage are put into the mixing machine with flour and undergone fermentation. Then the dough is rolled by laminator and the dough sheet is made and it is automatically punched in a moulded design by a cutting machine

Biscuit is then baked on a steel belt (or wire mesh belt) running in the oven for some minutes. The speed of the belt can be adjusted according to the kind of biscuit. After

baking, biscuits are cooled on a cooling conveyor which is connected with the oven. Biscuits are stacked and then packed.

2. Source of Technology

The technology of production is simple. Machinery can easily be purchased from India. Addresses of machinery suppliers are given below:-

1. KDR industries
1072, Bhandup Industrial State, Pannalal compound,
L.B.S. Marg, Bhandup West Mumbai-400078, Maharashtra, India
TEL. 91-22-2596 4534/ 5555 4049
FAX : 91-22-2596 8883
E-MAIL: maitto:kdrinds@boms.vsnl.net.in

2. Sunita impex Pvt. Ltd.
36A Bentinck Street, 1st floor, Kolkata 700069,
India, ph: 2248 1986/87, 2243 0102
Fax: 91-33-2248 3664
E-mail: Kolkata: admin@sunitaimpex.com, sutimpex@cal2.vsnl.net.in

B. ENGINEERING

1. Machinery and Equipment

The list of machinery and equipment required by the envisaged plant is given in Table 5.1. The total cost of machinery and equipment with the envisaged capacity is estimated at Birr 6.8 million, out of which Birr 5.44 is required in foreign currency.

Table 5.1**MACHINERY AND EQUIPMENT REQUIREMENT**

Sr. No.	Description	Qty. (No.)
1.	Cream mixer	1
2.	Dough mixing machine	1
3.	Laminator	1
4.	Cutting machine	1
5.	Rotary moulding machine	1
6.	Steel belt oven	1
7.	Cooling conveyor	1
8.	3-step cooling conveyor	1
9.	Stacking machine	1
10.	Wire cut attachment	1
11.	Oil spray machine	1
12.	Revolving salt duster	1

2. Land, building and Civil Works

The total land requirement, including provision for open space is 5,000 m², of which building will cover 2,500 m². Estimating unit building construction cost of Birr 2,500 per m², the total cost of building will be Birr 6,250,000. The cost of land leasing is Birr 0.35 per m², and for 80 years land holding will be Birr 140,000. Thus, the total estimated investment cost of land, building and civil works will be Birr 6,390,000.

3. Proposed Location

The plant is suggested to be located at Lemo woreda in Hosanna town.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

The plant requires 19 workers, and their annual expenditure, including fringe benefits, is estimated at Birr 179,280. For details see Table 6.1 below.

Table 6.1
MANPOWER REQUIREMENT AND ANNUAL LABOUR COST

Sr. No.	Description	Req. No.	Salary, Birr	
			Monthly	Annual
1.	Plant manager	1	2,500	30,000
2.	Secretary	1	700	8,400
3.	Accountant	1	900	10,800
4.	Clerk	1	500	6,000
5.	Technician Operator	4	2,400	28,800
6.	Assistant operators	4	1,800	21,600
7.	Maintenance engineer	1	1000	12,000
8.	Store keeper	1	500	6,000
9.	Purchaser/sales man	1	900	10,800
10.	Driver	1	450	5,400
11.	Guard	2	600	7,200
12.	Cleaner	1	200	2,400
	Sub-Total	19	12,450	149,400
	Employee benefit (20% BS)	-	-	29,880
	Total		-	179,280

B. TRAINING REQUIREMENT

The production operators will be trained on the operation and maintenance of machinery for about two weeks during commissioning by the expert of machinery supplier. The total cost of training is estimated at Birr 10,000.

VII. FINANCIAL ANALYSIS

The financial analysis of the biscuit project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 year
Source of finance	30 % equity
	70 % loan
Tax holidays	3 years
Bank interest	8%
Discount cash flow	8.5%
Accounts receivable	30 days
Raw material local	30days
Raw material, import	90days
Work in progress	2 days
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 16.19 million, of which 31 per cent will be required in foreign currency.

The major breakdown of the total initial investment cost is shown in Table 7.1.

Table 7.1
INITIAL INVESTMENT COST

Sr. No.	Cost Items	Total Cost (‘000 Birr)
1	Land lease value	140.0
2	Building and Civil Work	6,250.0
3	Plant Machinery and Equipment	6,800.0
4	Office Furniture and Equipment	75.0
5	Vehicle	450.0
6	Pre-production Expenditure*	950.3
7	Working Capital	1,530.1
	Total Investment cost	16,195.4
	Foreign Share	31

** N.B Pre-production expenditure includes interest during construction (Birr 790.30 thousand) training (Birr 10 thousand) and Birr 140 thousand costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 10.41 million (see Table 7.2). The material and utility cost accounts for 80.70 per cent, while repair and maintenance take 0.72 per cent of the production cost.

Table 7.2**ANNUAL PRODUCTION COST AT FULL CAPACITY ('000 BIRR)**

Items	Cost	%
Raw Material and Inputs	7,858.30	75.49
Utilities	543	5.22
Maintenance and repair	75	0.72
Labour direct	118.37	1.14
Factory overheads	0	0.00
Administration Costs	78.91	0.76
Total Operating Costs	8,673.58	83.32
Depreciation	1129	10.85
Cost of Finance	607.63	5.84
Total Production Cost	10,410.21	100

C. FINANCIAL EVALUATION**1. Profitability**

According to the projected income statement, the project will start generating profit in the first year of operation. Important ratios such as profit to total sales, net profit to equity (Return on equity) and net profit plus interest on total investment (return on total investment) show an increasing trend during the life-time of the project.

2. Break-even Analysis

The break-even point of the project including cost of finance when it starts to operate at full capacity (year 3) is estimated by using income statement projection.

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 15 \%$$

3. Pay Back Period

The investment cost and income statement projection are used to project the pay-back period. The project's initial investment will be fully recovered within 6 years.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 15 % and the net present value at 8.5% discount rate is Birr 5 million.

D. ECONOMIC BENEFITS

The project can create employment for 19 persons. In addition to supply of the domestic needs, the project will generate Birr 4.57 million in terms of tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports.