

**185. PROFILE ON THE ASSEMBLY OF
SEWING MACHINE**

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I. SUMMARY

This profile envisages the establishment of a plant for the assembly of sewing machine with a capacity of 6,000 units per annum. Sewing machine is a machine used to stitch fabric and other materials together with thread.

The demand for sewing machine is met entirely through import. The present (2012) demand for the sewing machine assembly is estimated at 18,989 units. The demand for sewing machine is projected to reach 27,802 units and 44,774 units by the year 2017 and 2022, respectively.

The principal raw materials required are hand attachment, wooden chassis, and components of various parts which have to be imported.

The total investment cost of the project including working capital is estimated at Birr 18.42 million. From the total investment cost the highest share (Birr 9.71 million or 52.72%) is accounted by initial working capital followed by fixed investment cost (Birr 7.07 million or 38.37%) and pre operation cost (Birr 1.64 million or 8.91%). From the total investment cost Birr 1.92 million or 10.43% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 20.05% and a net present value (NPV) of Birr 12.13 million discounted at 10%.

The project can create employment for 31 persons. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also create forward linkage with the textile/garment and leather articles manufacturing subsectors and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

A sewing machine is a machine used to stitch fabric and other materials together with thread. Sewing machines were invented during the first Industrial Revolution to decrease the amount of manual sewing work performed in clothing companies. Since the invention of the first working sewing machine, generally considered to have been the work of Englishman Thomas Saint in 1790, the sewing machine has vastly improved the efficiency and productivity of fabric, clothing and needle industries.

Home sewing machines are designed for one person to sew individual items while using a single stitch type. Modern sewing machines are designed in such a way that the fabric easily glides in and out of the machine without the hassle of needles and thimbles and other such tools used in hand sewing, automating the process of stitching and saving time.

Industrial sewing machines, by contrast, are larger, faster, more complex, and more varied in their size, cost, appearance, and task.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

Sewing machines are machines which are designed to join pieces of fabric or leather by means of either a locked or chain stitch. These machines are very essential items in the textile/garment industry to stick clothes, leather articles and the like. Major sewing machine types are classified as household type, automatic type and industrial type. Since there is no domestic plant for manufacturing or assembling sewing machines in the country, all types of the machines are imported from different countries. Import of sewing machines by type from the period (2000-2011) is given in Table 3.1.

Table 3.1
IMPORT OF SEWING MACHINES BY TYPE (NO.)

Year	House hold Type	Automatic Type	Industrial Type	Total
2000	8,060	38	2,198	10,296
2001	5,979	31	10,376	16,386
2002	3,686	68	9,000	12,754
2003	5,720	249	5,171	11,140
2004	13,944	44,899	9,372	68,215
2005	11,376	1,508	5,237	18,121
2006	11,055	308	22,533	33,896
2007	6,469	202	9,647	16,318
2008	6,331	619	10,075	17,025
*2009	4,492	597	9,177	14,266
2010	2,412	14,416	18,365	35,193
2011	677	970	7,810	9,457
Total	80,201	63,905	109,784	227,874
Average	6,683	5,325	9,149	18,989

Source: - Ethiopian Revenues & Customs Authority,

** Although there are import data of sewing machines in the Ethiopian Customs Authority External Trade Statistics, the volume of the items for 2009 has not been registered in number. The figure given is in weight/kilo gram and in value. Therefore, looking at data on other recent years, adjustment has been made for the data of the year.*

As could be seen from Table 3.1, import data of the three types of sewing machines shows fluctuations in trend. For instance, import data of household type sewing machines declined from 8,060 in the year 2000 to about 5,980, and 3686 in the years 2001 and 2002, respectively. Again, it jumped from 5,720 in 2003 to 13,944 in 2004 and thereafter it showed a declining trend. Similarly import of automatic type sewing machines varies from 38 during the year 2000 to 44,899 in the year 2004 and thereafter it showed a declining trend. Regarding import of the industrial type machines, the figure jumped from 2196 in 2000 to 22,533 in year 2006.

As explained above during the period 2000 -2011, import data of the product is very erratic showing a big jump in some years and a big decline in other years thus analysis could not be worked out to estimate the present demand. Hence, the simple average of the past 12 years has been taken. Accordingly, the current (2012) effective demand for sewing machines is estimated at 18,989 sewing machines.

2. Demand Projection

The demand for sewing machine is related with the expansion of the manufacturing sector, mainly the garment and leather goods production. Ethiopia has a good potential to expand the garment and the leather sector due to the availability of the basic raw materials. Moreover, the government has given due attention to these sub sectors in its industrial policy. Considering these favorable situations, the demand for sewing machines is estimated to grow by an average annual rate of 10% per annum. The projected demand is given in Table 3.2.

Table 3.2

PROJECTED DEMAND FOR SEWING MACHINE

Year	Qty (No.)
2013	20,888
2014	22,977
2015	25,275
2016	27,802
2017	27,802
2018	30,582
2019	33,640
2020	37,004
2021	40,704
2022	44,774
2023	49,251

3. Pricing and Distribution

The three types of sewing machines mentioned earlier are available in the Ethiopian market. According to the Ethiopian Customs Authority External Trade Statistics the average recent year (2011) CIF price was Birr 6,132. Allowing 30% for import duty and other clearing expenses, the factory price for the plant to be established is recommended to be Birr 7,972 per item.

With regard to distribution, the plant can sell its product directly to purchasers. To reach small purchasers such as people in small towns, it has to employ dealers.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

Based on market figures the annual production capacity of the plant is 6,000 sewing machines. The plant will operate single shift of 8 hours a day and for 300 days a year. Production can be doubled if the plant operates double shift 16 of hours a day.

2. Production Programme

The Plant will operate at 75% of its rated capacity during the first year, and will raise its production to 85% and 100% in the second year and succeeding years. Table 3.3 shows production programme.

Table 3.3
PRODUCTION PROGRAMME

Year	Capacity Utilization (%)	Production (units)
1	75	4,500
2	85	5,100
3-15	100	6,000

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

Most of the raw materials are imported from abroad. The major raw materials include hand attachment, wooden chassis, and components of various parts. The annual requirements of raw & auxiliary materials along with costs are given in Table 4.1.

Table 4.1
RAW MATERIALS AND AUXILLIARY MATERIALS

Sr. No	Description	Cost in Birr ('000)		
		FC	LC	TC
	A. RAW MATERIALS			
1	Various components and parts			
	Spool pin, Bobbin winder spindle, Bobbin winder stopper, Stitch width dial, Pattern selector dial, Hand wheel, Stitch length dial, Reverse stitch lever , Power switch, Bobbin winder thread guide, Thread tension dial, Thread take-up lever, Needle clamp screw, Presser foot, Bobbin cover, Bobbin cover release button, Feed dog and Needle plate	25,828	5,166	30,994
	Sub Total	25,828	5,166	30,994
	B. AUXILLIARY MATERIALS			
1	Accessory boxes	-	3,587	3,587
2	Paint and varnish	-	2,511	2,511
3	Packing materials	-	2,152	2,152
4	Miscellaneous	1,794	359	2,152
	Sub – Total	1,794	8,609	10,403
	Total Cost	27,622	13,775	41,397

B. UTILITIES

The plant will require 20,000 kWh of electrical energy per year, and 240 m³ of water per annum. At the rate of Birr 0.5778 per kWh for electricity and Birr 10.0 per m³ for water, annual cost of utilities will be Birr 13,956.

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The Sewing machine components are assembled on the body and base in different steps in the assembly section till it becomes ready for painting.

During the time of components assembly like, drilling holes, nibbling of hollow rivets, tapping and press fitting works have been performed. The sewing machines are then painted and finally packed.

3. Environmental Impact

The production/assembly of sewing machine does not result in effluent discharge or pollutant emission or any other adverse component into the environment. Hence, it is environmental friendly.

B. ENGINEERING

1. Machinery and Equipment

The total cost of machinery and equipment including freight insurance and bank cost is estimated to be about Birr 2,896,250 of which Birr 1,922,187 is required in foreign currency. The machineries and equipment required for assembling sewing machine is detailed in Table 5.1.

Table 5.1
LIST OF MACHINERY AND EQUIPMENT REQUIRMENT

Sr. No	Machine/Equipment Description	Qty. (N0.)
1	Drilling Machine (Hand)	3
2	Power press – cap .5t	2
3	Bench Grinder – Double end, 5” grinder, 1/4 hp	2
4	Bench lathe – precision type	1
5	Air Compressor, 300 litres Capacity with paint gun and other Equipment	1 set
6	Painting booth with exhaust fan	2
7	Tools and others	-

2. Land, Building and Civil Works

The total area required for plant site is estimated to be 800 m²; of this the built-up area of the factory will be 600 m². Building cost is estimated to be Birr 5,000 per m², and the total building cost will, then, be Birr 3 million.

According to the Federal Legislation on the Lease Holding of Urban Land (Proclamation No 721/2004) in principle, urban land permit by lease is on auction or negotiation basis, however, the time and condition of applying the proclamation shall be determined by the concerned regional or city government depending on the level of development.

The legislation has also set the maximum on lease period and the payment of lease prices. The lease period ranges from 99 years for education, cultural research health, sport, NGO , religious and residential area to 80 years for industry and 70 years for trade while the lease payment period ranges from 10 years to 60 years based on the towns grade and type of investment.

Moreover, advance payment of lease based on the type of investment ranges from 5% to 10%.The lease price is payable after the grace period annually. For those that pay the entire

amount of the lease will receive 0.5% discount from the total lease value and those that pay in installments will be charged interest based on the prevailing interest rate of banks. Moreover, based on the type of investment, two to seven years grace period shall also be provided.

However, the Federal Legislation on the Lease Holding of Urban Land apart from setting the maximum has conferred on regional and city governments the power to issue regulations on the exact terms based on the development level of each region.

In Addis Ababa the City's Land Administration and Development Authority is directly responsible in dealing with matters concerning land. However, regarding the manufacturing sector, industrial zone preparation is one of the strategic intervention measures adopted by the City Administration for the promotion of the sector and all manufacturing projects are assumed to be located in the developed industrial zones.

Regarding land allocation of industrial zones if the land requirement of the project is below 5,000 m², the land lease request is evaluated and decided upon by the Industrial Zone Development and Coordination Committee of the City's Investment Authority. However, if the land request is above 5,000 m² the request is evaluated by the City's Investment Authority and passed with recommendation to the Land Development and Administration Authority for decision, while the lease price is the same for both cases.

Moreover, the Addis Ababa City Administration has recently adopted a new land lease floor price for plots in the city. The new prices will be used as a benchmark for plots that are going to be auctioned by the city government or transferred under the new "Urban Lands Lease Holding Proclamation."

The new regulation classified the city into three zones. The first Zone is Central Market District Zone, which is classified in five levels and the floor land lease price ranges from Birr 1,686 to Birr 894 per m². The rate for Central Market District Zone will be applicable in most areas of the city that are considered to be main business areas that entertain high level of business activities.

The second zone, Transitional Zone, will also have five levels and the floor land lease price ranges from Birr 1,035 to Birr 555 per m². This zone includes places that are surrounding the city and are occupied by mainly residential units and industries.

The last and the third zone, Expansion Zone, is classified into four levels and covers areas that are considered to be in the outskirts of the city, where the city is expected to expand in the future. The floor land lease price in the Expansion Zone ranges from Birr 355 to Birr 191 per m² (see Table 5.2).

Table 5.2

NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA

Zone	Level	Floor price/m²
Central Market District	1 st	1686
	2 nd	1535
	3 rd	1323
	4 th	1085
	5 th	894
Transitional zone	1 st	1035
	2 nd	935
	3 rd	809
	4 th	685
	5 th	555
Expansion zone	1 st	355
	2 nd	299
	3 rd	217
	4 th	191

Accordingly, in order to estimate the land lease cost of the project profiles it is assumed that all new manufacturing projects will be located in industrial zones located in expansion zones. Therefore, for the profile a land lease rate of Birr 266 per m², which is equivalent to the average floor price of plots located in expansion zone, is adopted.

On the other hand, some of the investment incentives arranged by the Addis Ababa City Administration on lease payment for industrial projects are granting longer grace period and extending the lease payment period. The criteria are creation of job opportunity, foreign exchange saving, investment capital and land utilization tendency etc. Accordingly, Table 5.3 shows incentives for lease payment.

Table 5.3

INCENTIVES FOR LEASE PAYMENT OF INDUSTRIAL PROJECTS

Scored point	Grace period	Payment Completion Period	Down Payment
Above 75%	5 Years	30 Years	10%
From 50 - 75%	5 Years	28 Years	10%
From 25 - 49%	4 Years	25 Years	10%

For the purpose of this project profile the average i.e. five years grace period, 28 years payment completion period and 10% down payment is used. The land lease period for industry is 60 years.

Accordingly, the total land lease cost at a rate of Birr 266 per m² is estimated at Birr 212,800 of which 10% or Birr 21,280 will be paid in advance. The remaining Birr 191,520 will be paid in equal installments with in 28 years i.e. Birr 6,840 annually.

VI. HUMAN RESOURCE AND TRAINING REQUIREMENT

A. HUMAN RESOURCE REQUIREMENT

The plant will require about 31 workers of which 21 workers will be engaged in the production activities, and 10 workers in administration unit. The plant manager will have to be a mechanical engineer having sufficient experience in the field. The detail of human resource requirement is given in Table 6.1 below.

B. TRAINING REQUIRMENT

It is proposed that training should be given for production workers during the period of erection and commissioning. The training program will take a period of 3 weeks, and cost of training will be Birr 25,000.

Table 6.1
HUMAN RESOURCE REQUIRMENT AND COST

Sr. No	Description	Req. No.	Salary Monthly (Birr)	Salary Annual (Birr)
<u>A. Administration</u>				
1	Plant Manager	1	3,000	36,000
2	Secretary	1	1,000	12,000
3	Store Man	1	1200	14,400
4	Sales Man	1	1,200	14,400
5	Accountant	1	1,500	18,000
6	Clerk	1	800	9,600
7	General Services	4	500	6,000
Sub-Total		10	9,200	64,200
<u>B. Production</u>				
1	Supervisor	1	2,000	24,000
2	Skilled workers (Mechanic)	10	10,000	120,000
3	Semi-skilled workers	5	4,000	48,000
4	Helpers	5	1,750	21,000
Sub-total		31	17,750	213,000
8	Workers Benefit 25% of basic Salary		6737.5	69,300
	Training cost			25,000
Total Cost			33,688	346,500

VII. FINANCIAL ANALYSIS

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

Construction period	1 year
Source of finance	30 % equity and 70% loan
Tax holidays	3 years
Bank interest	10%
Discount cash flow	10%
Accounts receivable	30 days
Raw material local	30 days
Raw material imported	120 days
Work in progress	1 day
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days
Repair and maintenance	5% of machinery cost

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 18.42 million (See Table 7.1). From the total investment cost the highest share (Birr 9.71 million or 52.72%) is accounted by initial working capital followed by fixed investment cost (Birr 7.07 million or 38.37%) and pre operation cost (Birr 1.64 million or 8.91%). From the total investment cost Birr 1.92 million or 10.43% is required in foreign currency.

Table 7.1**INITIAL INVESTMENT COST ('000 Birr)**

Sr. No	Cost Items	Local Cost	Foreign Cost	Total Cost	% Share
1	Fixed investment				
1.1	Land Lease	21.28		21.28	0.12
1.2	Building and civil work	3,000.00		3,000.00	16.29
1.3	Machinery and equipment	974.06	1,922.19	2,896.25	15.72
1.4	Vehicles	900.00		900.00	4.89
1.5	Office furniture and equipment	250.00		250.00	1.36
	Sub total	5,145.34	1,922.19	7,067.53	38.37
2	Pre operating cost *				
2.1	Pre operating cost	436.89		436.89	2.37
2.2	Interest during construction	1,205.09		1,205.09	6.54
	Sub total	1,641.98		1,641.98	8.91
3	Working capital **	9,711.11		9,711.11	52.72
	Grand Total	16,498.43	1,922.19	18,420.62	100

* *N.B Pre operating cost include project implementation cost such as installation, startup, commissioning, project engineering, project management etc and capitalized interest during construction.*

** *The total working capital required at full capacity operation is Birr 13.90 million. However, only the initial working capital of Birr 9.71 million during the first year of production is assumed to be funded through external sources. During the remaining years the working capital requirement will be financed by funds to be generated internally (for detail working capital requirement see Appendix 7.A.1).*

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 44.54 million (see Table 7.2). The cost of raw material account for 92.94% of the production cost. The other major components of the production cost are depreciation, financial cost, direct labour, and cost of marketing and distribution which account for 2.23%, 2.60%, 0.62%, and 0.79% respectively. The remaining 0.83% is the share of utility, repair and maintenance, labour overhead and administration cost. For detail production cost see Appendix 7.A.2.

Table 7.2**ANNUAL PRODUCTION COST AT FULL CAPACITY (year three)**

Items	Cost (000 Birr)	%
Raw Material and Inputs	41,397	92.94
Utilities	14	0.03
Maintenance and repair	87	0.20
Labour direct	275	0.62
Labour overheads	69	0.15
Administration Costs	200	0.45
Land lease cost	0	0.00
Cost of marketing and distribution	350	0.79
Total Operating Costs	42,392	95.17
Depreciation	992	2.23
Cost of Finance	1,160	2.60
Total Production Cost	44,544	100.00

C. FINANCIAL EVALUATION**1. Profitability**

Based on the projected profit and loss statement, the project will generate a profit throughout its operation life. Annual net profit after tax will grow from Birr 2.42 million to Birr 3.70 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 36.00 million. For profit and loss statement and cash flow projection see Appendix 7.A.3 and 7.A.4 respectively.

2. Ratios

In financial analysis financial ratios and efficiency ratios are used as an index or yardstick for evaluating the financial position of a firm. It is also an indicator for the strength and weakness of the firm or a project. Using the year-end balance sheet figures and other relevant data, the most important ratios such as return on sales which is computed by dividing net income by revenue, return on assets (operating income divided by assets), return on equity (net profit divided by equity) and return on total investment (net profit plus interest divided by total investment) has been carried out over the period of the project life and all the results are found to be satisfactory.

3. Break-even Analysis

The break-even analysis establishes a relationship between operation costs and revenues. It indicates the level at which costs and revenue are in equilibrium. To this end, the break-even point for capacity utilization and sales value estimated by using income statement projection are computed as followed.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost} + \text{Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 20,089,440$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 23.17\%$$

4. Pay-back Period

The pay-back period, also called pay – off period is defined as the period required for recovering the original investment outlay through the accumulated net cash flows earned by the project. Accordingly, based on the projected cash flow it is estimated that the project's initial investment will be fully recovered within 6 years.

5. Internal Rate of Return

The internal rate of return (IRR) is the annualized effective compounded return rate that can be earned on the invested capital, i.e., the yield on the investment. Put another way, the internal rate of return for an investment is the discount rate that makes the net present value of the investment's income stream total to zero. It is an indicator of the efficiency or quality of an investment. A project is a good investment proposition if its IRR is greater than the rate of return that could be earned by alternate investments or putting the money in a bank account. Accordingly, the IRR of this project is computed to be 20.05% indicating the viability of the project.

6. Net Present Value

Net present value (NPV) is defined as the total present (discounted) value of a time series of cash flows. NPV aggregates cash flows that occur during different periods of time during the life of a project in to a common measuring unit i.e. present value. It is a standard method for using the time value of money to appraise long-term projects. NPV is an indicator of how much value an investment or project adds to the capital invested. In principal a project is accepted if the NPV is non-negative.

Accordingly, the net present value of the project at 10% discount rate is found to be Birr 12.13 million which is acceptable. For detail discounted cash flow see Appendix 7.A.5.

D. ECONOMIC AND SOCIAL BENEFITS

The project can create employment for 31 persons. The project will generate Birr 9.55 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. The project will also create forward linkage with the textile/garment and leather articles manufacturing subsectors and generate other income for the government.

Appendix 7.A

FINANCIAL ANALYSES SUPPORTING TABLES

Appendix 7.A.2
PRODUCTION COST (in 000 Birr)

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Raw Material and Inputs	28,978	37,257	41,397	41,397	41,397	41,397	41,397	41,397	41,397	41,397
Utilities	10	13	14	14	14	14	14	14	14	14
Maintenance and repair	61	78	87	87	87	87	87	87	87	87
Labour direct	193	248	275	275	275	275	275	275	275	275
Labour overheads	48	62	69	69	69	69	69	69	69	69
Administration Costs	140	180	200	200	200	200	200	200	200	200
Land lease cost	0	0	0	0	7	7	7	7	7	7
Cost of marketing and distribution	350	350	350	350	350	350	350	350	350	350
Total Operating Costs	29,779	38,188	42,392	42,392	42,399	42,399	42,399	42,399	42,399	42,399
Depreciation	992	992	992	992	992	145	145	145	145	145
Cost of Finance	0	1,326	1,160	994	828	663	497	331	166	0
Total Production Cost	30,771	40,505	44,544	44,378	44,219	43,207	43,041	42,875	42,710	42,544

Appendix 7.A.3
INCOME STATEMENT (in 000 Birr)

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Sales revenue	33,482	43,049	47,832	47,832	47,832	47,832	47,832	47,832	47,832	47,832
Less variable costs	29,429	37,838	42,042	42,042	42,042	42,042	42,042	42,042	42,042	42,042
VARIABLE MARGIN	4,053	5,211	5,790	5,790	5,790	5,790	5,790	5,790	5,790	5,790
in % of sales revenue	12.10	12.11	12.10	12.10	12.10	12.10	12.10	12.10	12.10	12.10
Less fixed costs	1,342	1,342	1,342	1,342	1,348	502	502	502	502	502
OPERATIONAL MARGIN	2,711	3,870	4,448	4,448	4,442	5,288	5,288	5,288	5,288	5,288
in % of sales revenue	8.10	8.99	9.30	9.30	9.29	11.06	11.06	11.06	11.06	11.06
Financial costs		1,326	1,160	994	828	663	497	331	166	0
GROSS PROFIT	2,711	2,544	3,288	3,454	3,613	4,625	4,791	4,957	5,122	5,288
in % of sales revenue	8.10	5.91	6.88	7.22	7.55	9.67	10.02	10.36	10.71	11.06
Income (corporate) tax	0	0	0	1,036	1,084	1,388	1,437	1,487	1,537	1,586
NET PROFIT	2,711	2,544	3,288	2,418	2,529	3,238	3,354	3,470	3,586	3,702
in % of sales revenue	8.10	5.91	6.88	5.06	5.29	6.77	7.01	7.25	7.50	7.74

Appendix 7.A.4
CASH FLOW FOR FINANCIAL MANAGEMENT (in 000 Birr)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Scrap
TOTAL CASH INFLOW	7,504	44,419	43,055	47,835	47,832	47,832	47,832	47,832	47,832	47,832	47,832	16,888
Inflow funds	7,504	10,937	6	3	0	0	0	0	0	0	0	0
Inflow operation	0	33,482	43,049	47,832	47,832	47,832	47,832	47,832	47,832	47,832	47,832	0
Other income	0	0	0	0	0	0	0	0	0	0	0	16,888
TOTAL CASH OUTFLOW	7,504	40,717	43,943	46,595	46,079	45,969	46,106	45,990	45,874	45,758	43,985	0
Increase in fixed assets	7,504	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	9,732	2,772	1,386	0	1	0	0	0	0	0	0
Operating costs	0	29,429	37,838	42,042	42,042	42,049	42,049	42,049	42,049	42,049	42,049	0
Marketing and Distribution cost	0	350	350	350	350	350	350	350	350	350	350	0
Income tax	0	0	0	0	1,036	1,084	1,388	1,437	1,487	1,537	1,586	0
Financial costs	0	1,205	1,326	1,160	994	828	663	497	331	166	0	0
Loan repayment	0	0	1,657	1,657	1,657	1,657	1,657	1,657	1,657	1,657	0	0
SURPLUS (DEFICIT)	0	3,703	-888	1,240	1,753	1,863	1,726	1,842	1,958	2,074	3,847	16,888
CUMULATIVE CASH BALANCE	0	3,703	2,815	4,055	5,807	7,671	9,396	11,238	13,196	15,270	19,116	36,004

Appendix 7.A.5
DISCOUNTED CASH FLOW (in 000 Birr)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Scrap
TOTAL CASH INFLOW	0	33,482	43,049	47,832	47,832	47,832	47,832	47,832	47,832	47,832	47,832	16,888
Inflow operation	0	33,482	43,049	47,832	47,832	47,832	47,832	47,832	47,832	47,832	47,832	0
Other income	0	0	0	0	0	0	0	0	0	0	0	16,888
TOTAL CASH OUTFLOW	17,216	32,546	39,571	42,392	43,429	43,483	43,786	43,836	43,886	43,936	43,985	0
Increase in fixed assets	7,504	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	9,711	2,766	1,383	0	1	0	0	0	0	0	0	0
Operating costs	0	29,429	37,838	42,042	42,042	42,049	42,049	42,049	42,049	42,049	42,049	0
Marketing and Distribution cost	0	350	350	350	350	350	350	350	350	350	350	0
Income (corporate) tax		0	0	0	1,036	1,084	1,388	1,437	1,487	1,537	1,586	0
NET CASH FLOW	-17,216	936	3,478	5,440	4,403	4,349	4,046	3,996	3,946	3,896	3,847	16,888
CUMULATIVE NET CASH FLOW	-17,216	16,279	-12,801	-7,361	-2,958	1,391	5,437	9,433	13,379	17,275	21,122	38,009
Net present value	-17,216	851	2,874	4,087	3,007	2,701	2,284	2,050	1,841	1,652	1,483	6,511
Cumulative net present value	-17,216	16,364	-13,490	-9,403	-6,395	-3,695	-1,411	639	2,480	4,133	5,616	12,127

NET PRESENT VALUE 12,127
INTERNAL RATE OF RETURN 20.05%
NORMAL PAYBACK 6 years