

**180. PROFILE ON THE PRODUCTION OF PINS**

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## **I. SUMMARY**

This profile envisages the establishment of a plant for the production of pins with a capacity of 560 tons per annum. Pins are products that are used on clothing to hold the cloth at ends together or to hold in place buds or decorations on the clothing; in offices to tie together paper sheets; in textile and clothing industries for packing purposes ;and as machine parts to lock together various components of the machine.

The demand for pins is met entirely through import. The present (2012) demand for pins is estimated at 183 tones. The demand for pins is projected to reach 295 tons and 475 tons by the year 2017 and 2022, respectively.

The principal raw materials required are hard drawn bright wires which have to be imported.

The total investment cost of the project including working capital is estimated at Birr 8.96 million. From the total investment cost the highest share (Birr 4.64 million or 51.79%) is accounted by fixed investment cost followed by initial working capital (Birr 3.32 million or 37.10%) and pre operation cost (Birr 995.48 thousand or 11.11%). From the total investment cost Birr 1.60 million or 17.85% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 33.87% and a net present value (NPV) of Birr 12.49 million discounted at 10%.

The project can create employment for 23 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 wear and automotive manufacturing sub sectors and also generates income for the Government in terms of tax revenue and payroll tax.

## **II. PRODUCT DESCRIPTIONS AND APPLICATIONS**

“Pins” includes three main objects namely; safety pins, pins and cotter pins as described below.

**Safety pins** are wire products that are coiled from spring steel wire with one pointed and another locking end. It is commonly used on clothing to hold the cloth at ends together or to hold in place badges or decorations on the clothing.

**Pins** are wire products sharpened at one end and flat at the other end like wire nail. They are widely used in offices to tie together paper sheets; in textile and clothing industries for packing purposes.

**Cotter pins** are wire products made from round or flat spring steel wires of various diameters and shapes. They are used as machine parts to lock together various components of the machine.

## **III. MARKET STUDY AND PLANT CAPACITY**

### **A. MARKET STUDY**

#### **1. Past Supply and Present Demand**

The local demand for pins is met through import. The country imports three kinds of pins namely safety pins, cotter and cotter pins and pins (excluding safety). Import of pins for the period 2002-2011 is shown in Table 3.1.

**Table 3.1**  
**IMPORT OF PINS (TONS)**

<b>Year</b>	<b>Cotter &amp; cotter pins</b>	<b>Safety pins</b>	<b>Pins (exc. safety)</b>	<b>Total</b>
2002	8	10	8	26
2003	21	44	8	73
2004	6	18	33	58
2005	2	7	9	18
2006	12	25	18	55
2007	27	40	150	217
2008	43	6	45	95
2009	20	10	184	215
2010	12	33	93	139
2011	11	13	172	196

*Source: - Ethiopian Revenue and Customs Authority.*

As can be seen from Table 3.1, import of pins fluctuates from year to year. However a general growth trend can be observed. For example the average annual import during the period 2002-2006 which was 51 tons has increased to an annual average on 172 tons during the next five years (2007-2011).

Considering the nature of the supply data the recent three years (2009-2011) average is assumed to fairly reflect the current demand for the product. Accordingly, current effective demand is estimated at 183 tones.

## **2. Projected Demand**

Cotters and cotter pins are mainly used in the engineering industries while safety pins are used in offices. Therefore, it can be concluded that the demand for the products depends in the performance of the country's economy.

According to the government's "Growth and Transformation Plan (2011 – 2015)" during the plan period, the country's economy is expected to grow at an average annual growth rate of

11.4%. However, in order to be conservative a growth rate of 10% which is slightly lower than the anticipated growth rate of GDP is used to project the demand for pins.

Accordingly, using the estimated present demand as a base and applying a growth rate of 10% the projected demand for pins is shown in Table 3.2.

**Table 3.2**  
**FORECASTED DEMAND FOR PINS (TONS)**

<b>Year</b>	<b>Projected Demand</b>
2013	202
2014	222
2015	244
2016	268
2017	295
2018	325
2019	357
2020	393
2021	432
2022	475
2023	523
2024	575
2025	633

### **3. Pricing and Distribution**

As per the latest Customs Authority data the average CIF price of pins in 2011 is Birr 30,321 per ton. Considering the average and adding 20% for tax, bank charge insurance, inland transport etc a factory get price of Birr 36,385 per tone is adopted for financial analysis.

The products can be distributed by appointing agents in major urban centers or by opening own distribution outlets.

## **B. PLANT CAPACITY AND PRODUCTION PROGRAM**

### **1. Plant Capacity**

By considering the projected demand and the available technologies, a plan with a capacity that can manufacture 560 tons of assorted all three kinds of pins per annum is selected

### **2. Production Program**

Considering the production technology, the time required to gain skill, and to penetrate the market, the plant will achieve its full capacity in the third year of operation and then after. During the second and third year of operation it will utilize 75% and 85% of its installed capacity. The production program is shown in Table 3.1.

**Table 3.1**  
**ANNUAL PRODUCTION PROGRAM**

<b>Type of products (Tons )</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
<b>Pins</b>	225	255	300
<b>Safety pins</b>	113	128	150
<b>Cotter Pins</b>	83	94	110
<b>Capacity %</b>	75	85	100

## **IV. RAW MATERIAL AND INPUTS**

### **A. RAW AND AUXILIARY MATERIALS**

The raw materials required for the manufacture of pins are hard drawn bright wires, MS sheet strips, Polishing materials, and Electroplating chemicals. All the raw materials have to be imported. Annual cost of raw materials is estimated at Birr 13,932,000. The required raw materials and their cost at full capacity production are given in Table 4.1

**Table 4.1**  
**RAW MATERIALS AND ANNUAL COST**

Sr. No	Raw Materials	Annual Requirement (ton)	Cost (000 Birr)		
			F.C	L.C	Total
1	Hard drawn bright wires	470	8,460	1,692	10,152
2	MS sheet strips	95	1,900	380	2,280
3	Polishing material	10	250	50	300
4	Electroplating salts and chemicals	20	1,000	200	1,200
	<b>Total</b>		<b>11,610</b>	<b>2,322</b>	<b>13,932</b>

## B. UTILITIES

The utilities required by the plant are electricity and water. Annual utilities cost is Birr 61,291.

The major utility requirement of the plant at full capacity operation is indicated in Table 4.2.

**Table 4.2**  
**ANNUAL UTILITIES REQUIREMENT&COST**

No	Utility	Unit	Quantity	Cost (Birr)
1	Electricity	kWh	80,568	55,591
2	Water	Meter cube	570	5,700
	<b>Total</b>			<b>61,291</b>

## V. TECHNOLOGY AND ENGINEERING

### A. TECHNOLOGY

#### 1. Process Description

**Safety pins** are manufactured using automatic machines. The coiled wire is fed to the machine where the wire is cut automatically to size pointed at one end fed to the loop and hook forming machine at the other end. The cap is manufactured separately from spring steel strips. The cap and the pin are assembled on the machine for final completed part.



**Pins** are manufactured using the automatic pin making machine. The hard drawn wire is first straightened and cut into the desired size automatically. The head is formed at the same time along with cutting of the pins in the desired size.

**Cotter pins** are manufactured by flattening and bending of spring steel wires using different manual and electrical machines and jigs.

The products that are manufactured and completed are fed in the polishing barrel where the products are bright polished. The polished parts are fed to the electroplating tank where it is given shiny finishes. Finally the product is dried and made ready for packing.

## **2. Environmental Impact**

The Production activity of the plant involves cutting, punching and bending of wires and sheet metal. This does not have any negative impact on the environment. The discharge from the electroplating is pre treated by the chemical whose cost is included in the chemical raw material. Thus the plant does not have any negative impact on the environment.

## **B. ENGINEERING**

### **1. Machinery and Equipment**

The total cost of machinery and equipment is Birr 1,971,000 out of which Birr 1,600,000 is required in foreign currency. The list of required machinery and equipment is given in Table 5.1.

**Table 5.1****LIST OF MACHINERY AND EQUIPMENT AND COST**

<b>Ser. No</b>	<b>Description</b>	<b>Unit</b>	<b>Qty</b>
1	Automatic Pins making machine	Nos.	1
2	Automatic Safety pins wire making machine	Nos.	1
3	Automatic strip cutting& cap making machine.	Nos.	1
4	Automatic pin wire & cap assembly machine	Nos.	1
5	Wire straightening & section rolling m/c	Nos.	1
6	Manual Cotter forming jig	Nos.	2
7	Polishing Barrel	Nos.	1
8	Electro plating plant With plating barrel	set	1
9	Drying drum	set	1

**2. Land, Building and Civil Works**

The total land required by the project is about 800 m<sup>2</sup>, of which 300 m<sup>2</sup> is built-up area. The cost of building and civil works is estimated at Birr 1,500,000.

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 m<sup>2</sup>, 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 m<sup>2</sup>, 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 m<sup>2</sup>. 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 m<sup>2</sup>. 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 m<sup>2</sup> (see Table 5.2).

**Table 5.2**

**NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA**

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

<b>Scored point</b>	<b>Grace period</b>	<b>Payment Completion Period</b>	<b>Down Payment</b>
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 m<sup>2</sup> 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 requires a total of 23 persons out of which 14 are technical workers. Annual cost of labor, including employees benefit, is estimated at Birr 594,600. The human resource requirement by type of job and monthly and annual and salary is indicated in Table 6.1.

**Table 6.1**  
**HUMAN RESOURCE REQUIREMENT AND LABOUR COST**

Sr. No.	Description	No.	Salary (Birr)	
			Monthly	Annual
<b>A. Administration</b>				
1	Plant Manager	1	5,000	60,000
2	Secretary	1	2,500	30,000
3	Accountant	1	2,500	30,000
4	Salesman/purchaser	1	2,500	30,000
5	Clerk	1	1,500	18,000
6	Cashier	1	2,000	24,000
7	General Service	3	800	28,800
<b>Sub Total</b>		<b>9</b>		<b>220,800</b>
<b>B. Production</b>				
8	Foreman/	1	2,500	30,000
9	Machinery Operators	6	2,000	144,000
10	Assistant Operators	1	1,500	6,000
11	Chemist	1	2,000	24,000
12	Quality controller &lab. technicians	3	1,500	54,000
13	Laborers	2	800	19,200
<b>Sub Total</b>		<b>14</b>	<b>-</b>	<b>277,200</b>
<b>TOTAL</b>				
Employee's Benefit (25% Of Basic Salary)		-	-	
<b>Total</b>		<b>23</b>	<b>-</b>	<b>594,600</b>

## **B. TRAINING REQUIREMENT**

On the job training of the operators would be enough for workers with technical back ground. As the production process involves is automatic machinery, skill dependence is minimal .Training and demonstration would be enough at the starting period of the factory. It requires an amount of Birr 10,000 for 12 workers.

## **VII. FINANCIAL ANALYSIS**

The financial analysis of the pins 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 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 8.96 million (See Table 7.1). From the total investment cost the highest share (Birr 4.64 million or 51.79%) is accounted by fixed investment cost followed by initial working capital (Birr 3.32 million or 37.10%) and pre operation cost (Birr 995.48 thousand or 11.11%). From the total investment cost Birr 1.60 million or 17.85% is required in foreign currency.

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

Sr. No	Cost Items	Local Cost	Foreign Cost	Total Cost	% Share
<b>1</b>	<b>Fixed investment</b>				
1.1	Land Lease	21.28		21.28	0.24
1.2	Building and civil work	1,500.00		1,500.00	16.74
1.3	Machinery and equipment	371.00	1,600.00	1,971.00	21.99
1.4	Vehicles	900.00		900.00	10.04
1.5	Office furniture and equipment	250.00		250.00	2.79
	<b>Sub total</b>	<b>3,042.28</b>	<b>1,600.00</b>	<b>4,642.28</b>	<b>51.79</b>
<b>2</b>	<b>Pre operating cost *</b>				
2.1	Pre operating cost	409.13		409.13	4.56
2.2	Interest during construction	586.35		586.35	6.54
	<b>Sub total</b>	<b>995.48</b>		<b>995.48</b>	<b>11.11</b>
<b>3</b>	<b>Working capital **</b>	<b>3,325.06</b>		<b>3,325.06</b>	<b>37.10</b>
	<b>Grand Total</b>	<b>7,362.82</b>	<b>1,600.00</b>	<b>8,962.82</b>	<b>100</b>

\* *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 4.78 million. However, only the initial working capital of Birr 3.32 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 16.70 million (see Table 7.2). The cost of raw material account for 83.41% of the production cost. The other major components of the production cost are depreciation, financial cost, direct labor, and cost of marketing and distribution which account for 4.44%, 3.38%, 2.98%, and 2.99% respectively. The remaining 2.80% is the share of utility, repair and maintenance, labor overhead and administration cost. For detail production cost see Appendix 7.A.2.



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

<b>Items</b>	<b>Cost (`000 Birr)</b>	<b>%</b>
Raw Material and Inputs	13,932	83.41
Utilities	61	0.37
Maintenance and repair	59	0.35
Labor direct	498	2.98
Labor overheads	97	0.58
Administration Costs	250	1.50
Land lease cost	0	0.00
Cost of marketing and distribution	500	2.99
<b>Total Operating Costs</b>	<b>15,397</b>	<b>92.18</b>
Depreciation	741	4.44
Cost of Finance	564	3.38
<b>Total Production Cost</b>	<b>16,702</b>	<b>100.00</b>

**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 2.01 million to Birr 2.81 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 27.01 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.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost} + \text{Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 8,189,580$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 26.97\%$$

## 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 3 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 33.87% 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 principle, 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 12.49 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 23 persons. The project will generate Birr 7.52 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 wear and automotive manufacturing sub sectors and also generates other income for the government.

**Appendix 7.A**

**FINANCIAL ANALYSES SUPPORTING TABLES**



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

<b>Item</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Year 7</b>	<b>Year 8</b>	<b>Year 9</b>	<b>Year 10</b>	<b>Year 11</b>
Raw Material and Inputs	9,752	12,539	13,932	13,932	13,932	13,932	13,932	13,932	13,932	13,932
Utilities	43	55	61	61	61	61	61	61	61	61
Maintenance and repair	41	53	59	59	59	59	59	59	59	59
Labour direct	349	448	498	498	498	498	498	498	498	498
Labour overheads	68	87	97	97	97	97	97	97	97	97
Administration Costs	175	225	250	250	250	250	250	250	250	250
Land lease cost	0	0	0	0	7	7	7	7	7	7
Cost of marketing and distribution	500	500	500	500	500	500	500	500	500	500
<b>Total Operating Costs</b>	<b>10,928</b>	<b>13,907</b>	<b>15,397</b>	<b>15,397</b>	<b>15,404</b>	<b>15,404</b>	<b>15,404</b>	<b>15,404</b>	<b>15,404</b>	<b>15,404</b>
Depreciation	741	741	741	741	741	85	85	85	85	85
Cost of Finance	0	645	564	484	403	322	242	161	81	0
<b>Total Production Cost</b>	<b>11,669</b>	<b>15,293</b>	<b>16,702</b>	<b>16,622</b>	<b>16,548</b>	<b>15,811</b>	<b>15,731</b>	<b>15,650</b>	<b>15,569</b>	<b>15,489</b>

**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	13,649	17,549	19,499	19,499	19,499	19,499	19,499	19,499	19,499	19,499
Less variable costs	10,428	13,407	14,897	14,897	14,897	14,897	14,897	14,897	14,897	14,897
<b>VARIABLE MARGIN</b>	<b>3,221</b>	<b>4,142</b>	<b>4,602</b>	<b>4,602</b>	<b>4,602</b>	<b>4,602</b>	<b>4,602</b>	<b>4,602</b>	<b>4,602</b>	<b>4,602</b>
in % of sales revenue	23.60	23.60	23.60	23.60	23.60	23.60	23.60	23.60	23.60	23.60
Less fixed costs	1,241	1,241	1,241	1,241	1,248	592	592	592	592	592
<b>OPERATIONAL MARGIN</b>	<b>1,980</b>	<b>2,901</b>	<b>3,361</b>	<b>3,361</b>	<b>3,354</b>	<b>4,010</b>	<b>4,010</b>	<b>4,010</b>	<b>4,010</b>	<b>4,010</b>
in % of sales revenue	14.51	16.53	17.24	17.24	17.20	20.57	20.57	20.57	20.57	20.57
Financial costs		645	564	484	403	322	242	161	81	0
<b>GROSS PROFIT</b>	<b>1,980</b>	<b>2,256</b>	<b>2,797</b>	<b>2,877</b>	<b>2,951</b>	<b>3,688</b>	<b>3,768</b>	<b>3,849</b>	<b>3,930</b>	<b>4,010</b>
in % of sales revenue	14.51	12.85	14.34	14.76	15.13	18.91	19.33	19.74	20.15	20.57
Income (corporate) tax	0	0	0	863	885	1,106	1,130	1,155	1,179	1,203
<b>NET PROFIT</b>	<b>1,980</b>	<b>2,256</b>	<b>2,797</b>	<b>2,014</b>	<b>2,066</b>	<b>2,581</b>	<b>2,638</b>	<b>2,694</b>	<b>2,751</b>	<b>2,807</b>
in % of sales revenue	14.51	12.85	14.34	10.33	10.59	13.24	13.53	13.82	14.11	14.40

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

<b>Item</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Year 7</b>	<b>Year 8</b>	<b>Year 9</b>	<b>Year 10</b>	<b>Year 11</b>	<b>Scrap</b>
<b>TOTAL CASH INFLOW</b>	<b>5,051</b>	<b>17,593</b>	<b>17,558</b>	<b>19,504</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>6,241</b>
Inflow funds	5,051	3,944	9	5	0	0	0	0	0	0	0	0
Inflow operation	0	13,649	17,549	19,499	19,499	19,499	19,499	19,499	19,499	19,499	19,499	0
Other income	0	0	0	0	0	0	0	0	0	0	0	6,241
<b>TOTAL CASH OUTFLOW</b>	<b>5,051</b>	<b>14,872</b>	<b>16,306</b>	<b>17,241</b>	<b>17,550</b>	<b>17,499</b>	<b>17,639</b>	<b>17,582</b>	<b>17,526</b>	<b>17,470</b>	<b>16,607</b>	<b>0</b>
Increase in fixed assets	5,051	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	3,358	947	474	0	1	0	0	0	0	0	0
Operating costs	0	10,428	13,407	14,897	14,897	14,904	14,904	14,904	14,904	14,904	14,904	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income tax	0	0	0	0	863	885	1,106	1,130	1,155	1,179	1,203	0
Financial costs	0	586	645	564	484	403	322	242	161	81	0	0
Loan repayment	0	0	806	806	806	806	806	806	806	806	0	0
<b>SURPLUS (DEFICIT)</b>	<b>0</b>	<b>2,721</b>	<b>1,252</b>	<b>2,262</b>	<b>1,949</b>	<b>2,000</b>	<b>1,860</b>	<b>1,917</b>	<b>1,973</b>	<b>2,029</b>	<b>2,892</b>	<b>6,241</b>
<b>CUMULATIVE CASH BALANCE</b>	<b>0</b>	<b>2,721</b>	<b>3,973</b>	<b>6,236</b>	<b>8,185</b>	<b>10,185</b>	<b>12,045</b>	<b>13,961</b>	<b>15,934</b>	<b>17,964</b>	<b>20,856</b>	<b>27,096</b>



**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
<b>TOTAL CASH INFLOW</b>	<b>0</b>	<b>13,649</b>	<b>17,549</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>19,499</b>	<b>6,241</b>
Inflow operation	0	13,649	17,549	19,499	19,499	19,499	19,499	19,499	19,499	19,499	19,499	0
Other income	0	0	0	0	0	0	0	0	0	0	0	6,241
<b>TOTAL CASH OUTFLOW</b>	<b>8,376</b>	<b>11,866</b>	<b>14,376</b>	<b>15,397</b>	<b>16,261</b>	<b>16,289</b>	<b>16,510</b>	<b>16,534</b>	<b>16,559</b>	<b>16,583</b>	<b>16,607</b>	<b>0</b>
Increase in fixed assets	5,051	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	3,325	938	469	0	1	0	0	0	0	0	0	0
Operating costs	0	10,428	13,407	14,897	14,897	14,904	14,904	14,904	14,904	14,904	14,904	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income (corporate) tax		0	0	0	863	885	1,106	1,130	1,155	1,179	1,203	0
<b>NET CASH FLOW</b>	<b>-8,376</b>	<b>1,783</b>	<b>3,173</b>	<b>4,102</b>	<b>3,238</b>	<b>3,210</b>	<b>2,989</b>	<b>2,965</b>	<b>2,940</b>	<b>2,916</b>	<b>2,892</b>	<b>6,241</b>
<b>CUMULATIVE NET CASH FLOW</b>	<b>-8,376</b>	<b>-6,593</b>	<b>-3,421</b>	<b>681</b>	<b>3,919</b>	<b>7,129</b>	<b>10,118</b>	<b>13,083</b>	<b>16,023</b>	<b>18,940</b>	<b>21,832</b>	<b>28,072</b>
Net present value	-8,376	1,621	2,622	3,082	2,212	1,993	1,687	1,521	1,372	1,237	1,115	2,406
Cumulative net present value	-8,376	-6,756	-4,134	-1,052	1,160	3,153	4,840	6,362	7,733	8,970	10,085	12,491

NET PRESENT VALUE                   12,491  
INTERNAL RATE OF RETURN       33.87%  
NORMAL PAYBACK                     3 years