PROFILE ON THE PRODUCTION OF SYNTHETIC FABRICS

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I. SUMMARY

This profile envisages the establishment of a plant for the production of synthetic fabrics with a capacity of 45 tons per annum. Synthetic fabrics are used in a wide range of wearing apparel, home furnishing and industrial products, either alone or in blends.

The demand for synthetic fabrics is met both through domestic production and import. The present (2012) demand for synthetic fabrics is estimated at 105.7 million m^2. The demand for synthetic fabrics is projected to reach 135.93 million m^2 and 171.48 million m^2 by the year 2017 and 2022, respectively.

The principal raw materials required is acrylic fiber which has to be imported.

The total investment cost of the project including working capital is estimated at Birr 9.44 million. From the total investment cost the highest share (Birr 7.58 million or 80.29%) is accounted by fixed investment cost initial followed by pre operation cost (Birr 1.12 million or 11.85%) and working capital (Birr 741.90 thousand or 7.86%). From the total investment cost Birr 2.63 million or 27.88% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 19.65% and a net present value (NPV) of Birr 4.50 million discounted at 10%.

The project can create employment for 28 persons. The establishment of such factory will have a foreign exchange earning effect through export and a foreign exchange saving effect to the country by substituting the current imports. The project will also create forward linkage with the textile manufacturing and handicraft sub sectors and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

The product is based on synthetic fibers and will produce polyester, nylon rayon etc. Polyester is used in a wide range of wearing apparel, home furnishing and industrial products, either alone or in blends. The exceptional resilience of polyester makes it especially suitable for use in easy care fabrics. Polyester fabrics and they are suitable for the manufacture of numerous articles. Bed sheets, curtain pillowing, etc., are some of the home furnishing articles made from polyester fabrics.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

Woven fabrics of synthetic yarn to the Ethiopian market are largely supplied from import. Till recent time the major local producer of woven fabrics from synthetic yarn is the Ethio-Japan S.C, which is located at Modjo, 65 k.m far from Addis Ababa. Domestic production of fabrics from nylon is presented Table 3.1.

Table 3.1

DOMESTIC PRODUCTION OF NYLON FABRICS

Year	Domestic Production ('000 m^2)
2002	1,310
2003	1,022
2004	1,424
2005	1,328
2006	1,067
2007	1,067
2008	1,067
2009	2,280
2010	2,984
2011	1,078

Source: - Report on Large & Medium Scale Manufacturing and Electricity Industries Survey, CSA, Various Issues.

Domestic production of nylon fabrics in the past ten years has not shown a significant change except in the years of 2009/10. During the years 2002 to 2008 the production level was almost similar ranging from the lowest 1,022 thousand m^2 to the highest 1,424 thousand m^2 with a mean figure of

1,184 thousand m^2. In the following years of 2009 and 2010 it increased to 2,280 thousand m^2 and 2,984 thousand m^2, respectively. The increase does not stay long and fell to a level of 1,078 thousand m^2 in the year 2011. From the above data it can be concluded that, without considering projects under implementation, there is an existing domestic capacity of producing about 3,000 thousand m^2 of synthetic fabrics.

Ethiopia imports a variety of woven synthetic fabrics from the world market. The major types of synthetic fabrics that are imported from the world market include unbleached or bleached woven fabrics; woven fabrics of high tenancy yarn, nylon or polyester, dyed or printed, woven fabrics of synthetic filament, plain woven fabrics of polyester fiber and colored woven fabrics of synthetic filament. The imported quantity of woven fabrics of synthetic yarn (excluding less than 85% synthetic yarn) in the past ten years is shown in Table 3.2.

Table 3.2

IMPORT OF WOVEN FABRICS OF SYNTHETIC YARN

Year	Quantity in (Tones)	Quantity (Million m^2)*	Value (`000 Birr)	Volume Growth Rate (%)
2002	10,547	62.04	246,320	
2003	18,987	111.69	391,466	80.0
2004	17,340	102.00	408,248	(8.67)
2005	18,981	111.65	530,333	9.5
2006	19,314	113.61	539,856	1.8
2007	17,734	104.32	520,595	(8.2)
2008	17,077	100.45	588,289	(3.7)
2009	14,950	87.94	791,825	(12.5)
2010	17,586	104.45	1,222,905	17.6
2011	16,541	97.30	1,400,011	(6.00)

Source: - *Ethiopian Revenues & Customs Authority.*

- ***Note: -*** **A conversion factor of 170 grams of woven fabrics of synthetic yarn is assumed to be on the average equal to one square meter.*

As could be seen from Table 3.2, import of synthetic fabrics has been generally erratic from year to year. The import level which was 62.04 million m^2 in the year 2002 has increased to a level of 111.69 million m^2 in the year 2003, which is an increase of 80%. After a slight decrease of

import in 2004 to 102.00 million m^2, it increased to about 111.76 million m^2 in the next consecutive years of 2005 and 2006. By the years 2007/08 and 2009 the imported quantity again declined to a level of 102.4 million m^2 and 88.2 million m^2, respectively. The imported quantity revived in the recent two years of 2010/11 and reached to yearly average of about 100 million m^2.

Ethiopia also export few quantity of fabrics made of synthetic fibers. Export of synthetic fabrics is shown in Table 3.3.

Table 3.3

EXPORT OF SYNTHETIC FABRICS

Year	Qty. (Tone)	Quantity (m^2)*	Value (`000 Birr)
2002	3.4	20,000	61
2003	11.9	70,000	196
2004	0.7	4,118	44
2005	-	-	-
2006	128.4	755,300	3,072
2007	239.4	1,405,894	3,286
2008	324.2	1,907,074	11,717
2009	-	-	-
2010	567.2	3,336,497	60,350
2011	469.1	2,759,434	63,642

Source: - *Ethiopian Revenues & Customs Authority***.**

Note: - **170 grams is assumed to be equal to one sq.mts for converting from kg to sq.mt.*

As can be seen from Table 3.3 export of synthetic fabric during the period 2002 to 2005 was negligible. During those four years the total amount of export were only 16 tones (94,118 m^2) or with a yearly average of 4 tones (23,530m^2). There was no export in the year 2005 but a moderate increase of import has been registered during the following three consecutive years. By the year 2006, year 2007 and year 2008 the exported quantity was about 128 tones, 239 tones and 324 tones. After complete absence of export in the year 2009 a significant amount of

synthetic fabrics, which amounts to 567 tones and 469 has been exported during 2010 and 2011, respectively. The increase of export of synthetic fabrics is believed as a result of the establishment of new textile/fabrics factories by foreign investors for export market which are not yet included in the CSA data in the domestic production.

From the above figures, it can be concluded that synthetic fabrics have both domestic and foreign market. Assuming the contribution of the existing local synthetic fabrics producers to be about 3 million m^2 for the domestic market 97% of the demand for synthetic woven fabrics is met through import.

To arrive at the total current demand (domestic and export) for woven synthetic fabrics the average import figure, domestic production and export of the last two years have been added. Accordingly, current total demand is found to be 105.7 million m^2. From this total demand 102.7 million m^2 is for domestic consumption and 3 million m^2 for export.

2. Projected Demand

It is clearly indicated that almost the entire demand for the product is met through import. As an import substitution project there is a wide market. The demand for the product will grow with population and income rise. Past average growth rate of import was about 6% per annum. The demand for textile fabrics in the world market is very huge if supplied consistently at the desired quality. Hence, there is no constraint on the demand side. For the purpose this project domestic demand is assumed to grow by 5 % which is lower than the past trend. For the export market an annual average growth rate of 10 % is applied due to the huge world market. The projected total demand, existing supply and the supply gap is shown in Table 3.4.

Table 3.4

PROJECTED DEMAND FOR SYNTHETIC WOVEN FABRICS (MILLION SQ. MT)

Yarn	Domestic Consumption	Export	Total Demand	Existing Production	Unsatisfied Demand
2013	107.8	3.30	111.10	3.00	108.10
2014	113.2	3.63	116.83	3.00	113.83
2015	118.9	3.99	122.89	3.00	119.89
2016	124.8	4.39	129.19	3.00	126.19
2017	131.1	4.83	135.93	3.00	132.93
2018	137.6	5.31	142.91	3.00	139.91
2019	144.5	5.84	150.34	3.00	147.34
2020	151.7	6.43	158.13	3.00	115.13
2021	159.3	7.07	166.37	3.00	163.37
2022	167.3	7.78	171.48	3.00	168.48

As could be seen from Table 3.4 the market for the product is very wide. Hence, a number of projects can be established to satisfy the demand.

3. Pricing and Distribution

The price of synthetic fabrics varies according to the type of material used and finishing. The synthetic fabrics to be produced could be either bleached, unbleached, dyed, printed, coloured, etc. For the purpose of this project the average CIF value of imported synthetic fabric during 2011 which is Birr 97/kg is considered. Accordingly adding 30% on the CIF value to account for duty and other import related expenses, the ex-factory price is set at Birr 126 per kg.

Currently, distribution of fabrics is undertaken by long established wholesalers, most of them located in Merkato area of Addis Ababa and other big towns and cities. The envisaged plant can also adopt the existing distribution channel.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

Based on the technology selected the proposed plant will have a production capacity of 45 tons per annum. The plant will operate single shift, 8 hours a day and for 300 days a year.

2. Production Program

Considering a period needed for production skill development and market penetration, the capacity utilization rates of 75%, 85% and 100% in the first, second, and third year respectively are selected. Table 3.5 shows the proposed production programme.

Table 3.5

PRODUCTION PROGRAMME

No.	Description	Production Year		
		1	2	3
1	Capacity utilization rate (%)	75	85	100
2	Synthetic fabrics	33.75	38.25	45.00

IV. MATERIALS AND INPUTS

A. RAW MATERIALS

The major raw material is acrylic fiber, and its annual requirement at full capacity operation is as indicated in Table 4.1. Till sufficient local production is to be created, the acrylic fiber will be imported from the international market and other inputs like packaging materials are also required which can be sourced from local packaging manufacturers.

Table 4.1

ANNUAL RAW MATERIALS REQUIREMENTS AND COST

NO.	Description	Quantity	Unit	Unit Cost (Birr)	Cost (`000 Birr)		
					LC	FC	Total (Birr)
1	Synthetic fiber	50	ton	45,000.00	607.50	1,642.50	2,250.00
2	Packing materials	1.5	ton	64,000.00		96.00	96.00
Total FOB						1,738.50	2,346.00
7	CIF(15%)					260.78	260.78
Total Raw material Annual cost					**607.50**	**1,999.28**	**2,606.78**

B. UTILITIES

Electricity and water are utilities required for the envisaged plant. The total annual expenditure on utilities will be Birr 172,500. The details are shown in Table 4.2 below.

Table 4.2

ANNUAL UILITIES REQUIREMENTS

Sr. No.	Description	Annual Consumption	Unit	Unit Cost (Birr)	Total Cost (000 Birr)
1	Electricity	250,000	kwh	0.58	167.14
2	Water	2,750	m^3	10.00	5.36
Total Annual cost					**172.5**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

Synthetic fibers are supplied in either filament or staple form. The continuous filament fiber is processed into yarn in the same manner as silk. Synthetic staple fiber, which consists of short lengths of fiber, is processed as are raw cotton and wool before spinning. The production process involves the following sub- processes.

- Opening, Blending and Cleaning
- Carding
- Drawing
- Roving
- Spinning
- Winding

Opening, blending and cleaning: -All staple fibers must pass through some form of opening, blending and cleaning to convert compressed bales of fiber into an open sheet for presentation to the carding machine.

Carding:- is the last major cleaning and opening operation in the normal process and converts the open flock into a condensed sliver, reducing its weight per meter to 100th of the flock weight.

Drawing: - The draw frame draws several slivers from the card and attenuates them to the dimensions of one thus increasing the uniformity of the product.

Roving:- The objective of roving is to attenuate further and to even the sliver, give it some twist to the strength required at this stage, and wind onto a bobbin to fit a ring frame creel. This process is eliminated in open-end [rotor] spinning.

Spinning: - It is the final process in the transformation of fiber into yarn or thread. Spinning twists fibers of finite length together to form a long, continuous length of thread or yarn. The yarn is finally wound in appropriate container like cone, cops, reel etc. by using winding machine according to the market demand.

The production of yarn starts from dyed fiber as a result no finishing operation is involved which uses many chemicals which requires treatment plant before disposal. So the envisaged plant has no any adverse impact on environment.

2. Environmental Impact

In terms of emissions, envisaged plant production is not overly polluting. It is energy-intensive, but the chemicals used are on a closed-loop and used over and over without needing to be disposed of. Acrylic fiber and yarn is not biodegradables. So to overcome this environmental problem the wastes during production should be recycled in the process with an additional investment for environmental protection of about 150,000, which is included in the list and cost of machinery.

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B. ENGINEERING

1. Machinery and Equipment

The list of machinery and equipment required for the production of synthetic yarn is indicated in Table 5.1.The total cost of machinery is estimated to be Birr 3.02 million, out of which Birr 2.63 million is required in foreign currency.

Table 5.1

LIST OF MACHINERY AND EQUIPMENT AND COST

Sr. No.	Description	Qty	Unit	Unit Cost (Birr)	Total Cost (`000 Birr)		
					LC	FC	Total (Birr)
1	Ring frame-400 spindle	1	pcs	840,000		840.00	840.00
2	Twisting machine of 200 spindles German type with bottom and tap rollers and aluminum pulley	1	pcs	192,000		192.00	192.00
3	Intersection gill box 2Hx2 balls Japan type 48 fallers, high speed	1	pcs	128,000		128.00	128.00
4	Intersection gill box 2H x 4 balls Japan type 48 fallers, high speed	1	pcs	240,000		240.00	240.00
5	Intersection gill box 2Hx4 balls Japan type 48 fallers, high speed	1	pcs	240,000		240.00	240.00
6	Robbins machine 10H x 20 balls	1	pcs	96,000		96.00	96.00
7	Robbins machine 15Hx30 balls	1	pcs	136,000		136.00	136.00
8	Cheese winder 30 spindles CI drum	1	set	72,000		72.00	72.00
9	Two rolling machine 40 page cards	1	set	136,000		136.00	136.00
10	Carding machine	1	pcs	134,000		134.00	134.00
11	Hand building press 5 kg. capacity	1	pcs	40,000		40.00	40.00
12	Electrical fitting	1	Set	100,000		100.00	100.00
12	Waste treatment unit	1	Set	150,000		150.00	150.00
13	Temperature and humidity control	1	Set	40,000		40.00	40.00
Total						2,544.00	2,544.00
14	Spare parts (5%)					127.20	127.20
Total Fob Price						**2,631.20**	**2,631.20**
15	CIF (15%)				394.68		394.68
Total machinery cost					**394.68**	**2,631.20**	**3,025.88**

2. Building and Civil Works

The envisaged plant requires a total land area of 1000 $m^{2,}$ of which 750m^2 would be built-up area. Building construction cost at a rate of Birr 4500/m^2 is estimated to be Birr 3.37 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 m^2, 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^2, 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^2. 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^2 .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^2 (see Table 5.2).

Table 5.2

NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA

Zone	Level	Floor price/m^2
Central Market District	1st	1686
	2nd	1535
	3rd	1323
	4th	1085
	5th	894
Transitional zone	1st	1035
	2nd	935
	3rd	809
	4th	685
	5th	555
Expansion zone	1st	355
	2nd	299
	3rd	217
	4th	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^2 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 criterions 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 period of lease for industry is 60 years. Accordingly, the total lease cost, for a period of 60 years at a land lease rate of Birr 266 per m^2 is estimated at Birr 15.96 million of which 10% or Birr 1,596,000 will be paid in advance. The remaining Birr 14.36 million will be paid in equal installments within 28 years i.e. Birr 513,000 annually.

NB: The land issue in the above statement narrates or shows only Addis Ababa's city administration land lease price, policy and regulations.

Accordingly the project profile prepared based on the land lease price of Addis Ababa region.

To know land lease price, police and regulation of other regional state of the country updated information is available at Ethiopian Investment Agency's website www.eia.gov.et on the factor cost.

VI. HUMAN RESOURCE AND TRAINING REQUIREMENT

A. HUMAN RESOURCE REQUIREMENT

A total of 28 persons would be required for the envisaged plant. The annual cost would be Birr 624,960.00. The details are given in Table 6.1.

Table 6.1

HUMAN RESOURCE REQUIREMENT AND LABOUR COST

Sr. No.	Description	Qty	Monthly Salary (Birr)	Annual salary (`000 Birr)
1	Plant manager	1	6,000.00	72.0
2	Secretary	1	1,500.00	18.0
3	Administration and finance	1	3,500.00	42.0
4	Accountant	1	2,000.00	24.0
5	Mechanic	1	2,200.00	26.4
6	Electrician	1	2,200.00	26.4
7	operators	7	1,400.00	117.6
8	production foreman	1	3,000.00	36.0
11	Clerk	1	800.00	9.6
12	Cashier	1	1,000.00	12.0
13	Assistant operator	5	700.00	42.0
14	Quality supervisor	2	1,600.00	38.4
15	store keeper	1	1,400.00	16.8
16	time keeper	1	1,200.00	14.4
17	Guards	3	700.00	25.2
Total		**28**	**29,200.00**	**520.8**
18	Employment benefits and allowances 20%		5,840.00	104.2
Total Annual Labour cost (Direct +Indirect)				**625.0**

B. TRAINING REQUIREMENT

Training will be required for supervisor and production workers. It is recommended that machinery supplier will provide on-the-job training for two weeks. The cost of training is estimated at Birr 120,000; 75% of which would be in foreign currency.

VII. FINANCIAL ANALYSIS

The financial analysis of the synthetic fabrics 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	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 9.44 million (See Table 7.1). From the total investment cost the highest share (Birr 7.58 million or 80.29%) is accounted by fixed investment cost initial followed by pre operation cost (Birr 1.12 million or 11.85%) and working capital (Birr 741.90 thousand or 7.86%). From the total investment cost Birr 2.63 million or 27.88% 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	26.60		26.60	0.28
1.2	Building and civil work	3,375.00		3,375.00	35.76
1.3	Machinery and equipment	394.68	2,631.20	3,025.88	32.06
1.4	Vehicles	900.00		900.00	9.54
1.5	Office furniture and equipment	250.00		250.00	2.65
	Sub total	**4,946.28**	**2,631.20**	**7,577.48**	**80.29**
2	**Pre operating cost ***				
2.1	Pre operating cost	501.29		501.29	5.31
2.2	Interest during construction	617.45		617.45	6.54
	Sub total	**1,118.74**		**1,118.74**	**11.85**
3	**Working capital ****	**741.90**		**741.90**	**7.86**
	Grand Total	**6,806.92**	**2,631.20**	**9,438.12**	**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 974.02 thousand. However, only the initial working capital of Birr 741.82 thousand 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 5.39 million (see Table 7.2). The cost of raw material account for 48.41% of the production cost. The other major components of the production cost are financial cost, depreciation utility, and labour which account for 11.03%, 19.41%, 3.21% and 9.67% respectively. The remaining 8.27% is the share of 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)

Items	Cost (in 000 Birr)	%
Raw Material and Inputs	2,607	48.41
Utilities	173	3.21
Maintenance and repair	91	1.69
Labour direct	521	9.67
Labour overheads	104	1.93
Administration Costs	100	1.86
Land lease cost	0	0.00
Cost of marketing and distribution	150	2.79
Total Operating Costs	**3,746**	**69.55**
Depreciation	1,045	19.41
Cost of Finance	594	11.03
Total Production Cost	**5,386**	**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 567 thousand to Birr 1.54 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 12.86 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.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost + Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 2{,}566{,}620$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 47.53\%$$

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 5 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 19.65% 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 4.50 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 28 persons. The project will generate Birr 3.55 million in terms of tax revenue. The establishment of such factory will have a foreign exchange earning effect through export and a foreign exchange saving effect to the country by substituting the current imports. The project will also create forward linkage with the textile manufacturing and handicraft sub sectors and also generates other income for the Government.

Appendix 7.A

FINANCIAL ANALYSES SUPPORTING TABLES

Appendix 7.A.1

NET WORKING CAPITAL (in 000 Birr)

Items	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Total inventory	521.40	586.58	651.75	651.75	651.75	651.75	651.75	651.75	651.75	651.75
Accounts receivable	252.23	282.20	312.17	312.17	312.88	312.88	312.88	312.88	312.88	312.88
Cash-in-hand	9.07	10.20	11.33	11.33	11.45	11.45	11.45	11.45	11.45	11.45
CURRENT ASSETS	**782.70**	**878.98**	**975.25**	**975.25**	**976.08**	**976.08**	**976.08**	**976.08**	**976.08**	**976.08**
Accounts payable	40.80	45.90	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00
CURRENT LIABILITIES	**40.80**	**45.90**	**51.00**	**51.00**	**51.00**	**51.00**	**51.00**	**51.00**	**51.00**	**51.00**
TOTAL WORKING CAPITAL	**741.90**	**833.08**	**924.25**	**924.25**	**925.08**	**925.08**	**925.08**	**925.08**	**925.08**	**925.08**

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	2,086	2,346	2,607	2,607	2,607	2,607	2,607	2,607	2,607	2,607
Utilities	138	156	173	173	173	173	173	173	173	173
Maintenance and repair	73	82	91	91	91	91	91	91	91	91
Labour direct	417	469	521	521	521	521	521	521	521	521
Labour overheads	83	94	104	104	104	104	104	104	104	104
Administration Costs	80	90	100	100	100	100	100	100	100	100
Land lease cost	0	0	0	0	9	9	9	9	9	9
Cost of marketing and distribution	150	150	150	150	150	150	150	150	150	150
Total Operating Costs	**3,027**	**3,386**	**3,746**	**3,746**	**3,755**	**3,755**	**3,755**	**3,755**	**3,755**	**3,755**
Depreciation	1,045	1,045	1,045	1,045	1,045	160	160	160	160	160
Cost of Finance	0	679	594	509	424	340	255	170	85	0
Total Production Cost	**4,072**	**5,111**	**5,386**	**5,301**	**5,224**	**4,254**	**4,169**	**4,084**	**3,999**	**3,915**

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	4,889	5,500	6,111	6,111	6,111	6,111	6,111	6,111	6,111	6,111
Less variable costs	2,877	3,236	3,596	3,596	3,596	3,596	3,596	3,596	3,596	3,596
VARIABLE MARGIN	**2,012**	**2,264**	**2,515**	**2,515**	**2,515**	**2,515**	**2,515**	**2,515**	**2,515**	**2,515**
in % of sales revenue	41.16	41.16	41.16	41.16	41.16	41.16	41.16	41.16	41.16	41.16
Less fixed costs	1,195	1,195	1,195	1,195	1,204	319	319	319	319	319
OPERATIONAL MARGIN	**817**	**1,068**	**1,320**	**1,320**	**1,311**	**2,196**	**2,196**	**2,196**	**2,196**	**2,196**
in % of sales revenue	16.71	19.42	21.59	21.59	21.45	35.94	35.94	35.94	35.94	35.94
Financial costs		679	594	509	424	340	255	170	85	0
GROSS PROFIT	**817**	**389**	**725**	**810**	**887**	**1,857**	**1,942**	**2,027**	**2,112**	**2,196**
in % of sales revenue	16.71	7.07	11.87	13.26	14.51	30.39	31.77	33.16	34.55	35.94
Income (corporate) tax	0	0	0	243	266	557	583	608	633	659
NET PROFIT	**817**	**389**	**725**	**567**	**621**	**1,300**	**1,359**	**1,419**	**1,478**	**1,538**
in % of sales revenue	16.71	7.07	11.87	9.28	10.15	21.27	22.24	23.21	24.19	25.16

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	**8,079**	**6,289**	**5,505**	**6,116**	**6,111**	**6,111**	**6,111**	**6,111**	**6,111**	**6,111**	**6,111**	**3,594**
Inflow funds	8,079	1,400	5	5	0	0	0	0	0	0	0	0
Inflow operation	0	4,889	5,500	6,111	6,111	6,111	6,111	6,111	6,111	6,111	6,111	0
Other income	0	0	0	0	0	0	0	0	0	0	0	3,594
TOTAL CASH OUTFLOW	**8,079**	**4,427**	**5,011**	**5,286**	**5,347**	**5,295**	**5,500**	**5,441**	**5,381**	**5,322**	**4,413**	**0**
Increase in fixed assets	8,079	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	783	96	96	0	1	0	0	0	0	0	0
Operating costs	0	2,877	3,236	3,596	3,596	3,605	3,605	3,605	3,605	3,605	3,605	0
Marketing and Distribution cost	0	150	150	150	150	150	150	150	150	150	150	0
Income tax	0	0	0	0	243	266	557	583	608	633	659	0
Financial costs	0	617	679	594	509	424	340	255	170	85	0	0
Loan repayment	0	0	849	849	849	849	849	849	849	849	0	0
SURPLUS (DEFICIT)	**0**	**1,862**	**494**	**831**	**764**	**816**	**611**	**670**	**730**	**789**	**1,698**	**3,594**
CUMULATIVE CASH BALANCE	**0**	**1,862**	**2,356**	**3,187**	**3,951**	**4,767**	**5,378**	**6,048**	**6,777**	**7,567**	**9,264**	**12,858**

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**	**4,889**	**5,500**	**6,111**	**6,111**	**6,111**	**6,111**	**6,111**	**6,111**	**6,111**	**6,111**	**3,594**
Inflow operation	0	4,889	5,500	6,111	6,111	6,111	6,111	6,111	6,111	6,111	6,111	0
Other income	0	0	0	0	0	0	0	0	0	0	0	3,594
TOTAL CASH OUTFLOW	**8,821**	**3,118**	**3,478**	**3,746**	**3,990**	**4,021**	**4,312**	**4,337**	**4,363**	**4,388**	**4,413**	**0**
Increase in fixed assets	8,079	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	742	91	91	0	1	0	0	0	0	0	0	0
Operating costs	0	2,877	3,236	3,596	3,596	3,605	3,605	3,605	3,605	3,605	3,605	0
Marketing and Distribution cost	0	150	150	150	150	150	150	150	150	150	150	0
Income (corporate) tax		0	0	0	243	266	557	583	608	633	659	0
NET CASH FLOW	**-8,821**	**1,771**	**2,022**	**2,365**	**2,121**	**2,090**	**1,799**	**1,774**	**1,748**	**1,723**	**1,698**	**3,594**
CUMULATIVE NET CASH FLOW	**-8,821**	**-7,050**	**-5,027**	**-2,662**	**-541**	**1,549**	**3,349**	**5,123**	**6,871**	**8,594**	**10,292**	**13,886**
Net present value	-8,821	1,610	1,671	1,777	1,449	1,298	1,016	910	816	731	654	1,386
Cumulative net present value	-8,821	-7,211	-5,539	-3,762	-2,314	-1,016	0	910	1,726	2,457	3,111	4,497

NET PRESENT VALUE	4,497
INTERNAL RATE OF RETURN	19.65%
NORMAL PAYBACK	5 years