

**35. PROFILE ON TEXTILE WALL AND  
FLOOR COVERING**

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## **I. SUMMARY**

This profile envisages the establishment of a plant for the production of textile wall and floor covering with a capacity of 20,000 m<sup>2</sup> per annum.

The major raw material required are cotton yarn and acrylic yarn. Cotton yarn is locally available while acrylic yarn have to be imported.

The present demand for the proposed product is estimated at 18,784 m<sup>2</sup> per annum. The demand is expected to reach at 55,289 m<sup>2</sup> by the year 2018.

The total investment requirement is estimated at Birr 6.44 million, out of which Birr 2.56 million is required for plant and machinery. The plant will create employment opportunities for 24 persons.

The project is financially viable with an internal rate of return (IRR) of 20.37 % and a net present value (NPV) of Birr 4.17 million, discounted at 8.5%.

The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. It has also a forward linkage with cotton yarn producing factories.

## **II. PRODUCT DESCRIPTION AND APPLICATION**

Carpet is a textile floor covering that is distinguished from the more general term "rug" by being fixed to the floor surface and extending wall to wall. The earliest peoples covered the floors of their dwellings with animal skins, grass, or, later, woven reed mats. When people learned how to spin cotton and wool, woven mats of these materials largely

replaced earlier coverings. Around 3000 B.C. Egyptians sewed brightly colored pieces of woolen cloth onto linen and placed it on their floors.

Textile Floor coverings are decorative products with a variety of design and color used in decorating the interior floor of living rooms, offices, hotel rooms or other places. Since long time ago carpets were made by hand. Large quantities of carpets known as "Hand knotted" Oriental Carpets are still made by hand in oriental countries and in Northern Africa as well as in Addis Ababa and in many other towns and cities.

They are popular as decorative carpets although they are expensive. Hand knotted wool carpets are also made by hand in Central Shoa region in Ethiopia. Intensive demonstration, training and other support activities are also being carried out by the Federal Micro and Small Enterprises Development Agency contributing to small amounts of export sales by small and medium enterprises.

Nowadays modern carpets are made by machines on broad automatic looms satisfying the quantitative and qualitative demands of the society. Among several styles of carpet manufacturing the modern most popular design of carpet is the tufted carpet. It is widely available in the market with different colors and sizes satisfying the need for broad wall to wall carpets.

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

#### **A. MARKET STUDY**

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

Textile wall coverings are decorative products with variety of design, embroidery and color used in decorating interior walls. They give the extra elegance to the interior by enhancing the beauty and décor of the room and hide imperfections of walls.

Upgraded lifestyle and a replenished home décor need the usage of textile wall coverings. Textile wall coverings are made from various types of fabrics and fibers as to produce more generosity and creativity. Textile floor coverings are used in flats, offices and hotels.

According to the official statistics collected from the Customs Authority, imported textile wall coverings were negligible while floor coverings average annual import in 1997-2006 was 4,728 m<sup>2</sup>. A closer look at the data set further reveals that the total textile wall and floor coverings in 1997-98 were very low as compared to the remaining eight years. Thus, considering the last eight years, the average annual import was 6,911 m<sup>2</sup>. Further analysis on the last ten years through applying a liner trend equation yields:

$$Y = 2,158 X - 2,803$$

$$R^2 = 58.89 \%$$

Based on this equation, the current effective demand for wall and textile floor coverings is estimated at 18,784 m<sup>2</sup>.

**Table 3.1**

**IMPORTED TEXTILE WALL COVERINGS AND FLOOR COVERINGS (M<sup>2</sup>)**

<b>Year</b>	<b>Textile Wall Coverings</b>	<b>Floor Coverings</b>	<b>Total</b>
1997	30	1,056	1,126
1998	234	195	429
1999	-	2,313	2,313
2000	1,598	838	2,436
2001	-	2,646	2,646
2002	9	2,119	2,128
2003	-	4,119	4,119
2004	105	8,058	8,163
2005	48	21,564	21,612
2006	7,542	4,329	11,872

*Source: Customs Authority.*

## 2. Projected Demand

The demand for textile wall coverings and floor coverings is directly related with the growth in income. Therefore in this study the demand for textile wall coverings and floor coverings is determined by applying the latest GDP growth rate registered in 2006/7 at 11.4 %. Accordingly, the projected demand for textile and wall coverings for 2018 is 55,289 m<sup>2</sup>. The Projected demand is presented in Table 3.2.

**Table 3.2**

**PROJECTED DEMAND FOR TEXTILE WALL COVERINGS AND FLOOR COVERINGS**

<b>Year</b>	<b>Projected Demand (m<sup>2</sup>)</b>
2009	20,925
2010	23,311
2011	25,968
2012	28,929
2013	32,227
2014	35,900
2015	39,993
2016	44,552
2017	49,631
2018	55,289

## 3. Pricing and Distribution

Imported CIF price for wall and floor coverings ranges between 100 and 120 Birr per m<sup>2</sup>. The factory-gate price recommended for the project under study is Birr 150 per m<sup>2</sup>. Distribution of the product will be handled through the existing wholesale -retail channel.

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

### **1. Plant Capacity**

Based on the market study and minimum economies of scale, the production capacity of the plant is proposed to be 20,000m<sup>2</sup>.

### **2. Production Programme**

Using the demand projection as guide for the production activity, the production programme is indicated in Table 3.3. The plant will produce 80% of its capacity during the first year, 90% in the second year and full capacity in the third year and then after. The plant will operate 300 days in a year and one shift of 8 hours per day.

The capacity utilization of the plant at the start up period is due to marketing and other factors like skill and experience.

**Table.3.3**  
**Production Programme**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3-10</b>
Annual production(m <sup>2</sup> )	16,000	18,000	20,000
Capacity utilization (%)	80	90	100

## **IV. MATERIAL INPUTS AND UTILITIES**

### **A. RAW MATERIALS**

Carpet consists of dyed pile yarns; a primary backing in which the yarns are sewn; a secondary backing that adds strength to the carpet; adhesive that binds the primary and secondary backings; and, in most cases, a cushion laid underneath the carpet to give it a softer, more luxurious feel.

Each part requires different raw materials as listed in Table 4.1. Among the raw materials, cotton yarn and jute are locally available from jute and textile producing factories operating in the country.

**Table 4.1**  
**RAW MATERIALS REQUIREMENT AND COST**

Sr. No.	Raw Material	Description	Annual Input(KG)	Cost ( Birr )		Total Cost ( Birr )
				F.C	L.C	
1	Backing					
1.1	Cotton yarn	count 16/3	12,400	-	744,000	744,000
1.2	Jute	Long Fiber	20,000	-	6,600	6,600
2	Facing					
2.1	Acrylic yarn	count 21/7	25,000	93750	31,250	125,000
3	Adhesive	Latex Type		37,200	16,400	53,600
	<b>Grand Total</b>			<b>130,950</b>	<b>798,250</b>	<b>929,200</b>

## B. UTILITIES

The major utility requirement of the project is water and electricity. The required quantity and cost of these items are indicated in Table 4.2.

**Table 4.2**  
**ANNUAL UTILITIES REQUIREMENTS AND COST**

Sr. No.	Utility	Unit	Qty	Cost ( Birr )
1	Electricity	kWh	39,520	18,716.7
2	Water	m <sup>3</sup>	1,560	5,070.0
	<b>Total</b>			<b>23,786.7</b>



## **V. TECHNOLOGY AND ENGINEERING**

### **A. TECHNOLOGY**

#### **1. Process Description**

The type of carpet that is envisaged to be produced in the factory has got two main parts; the backing and the face. Each part can be made from different kinds of materials depending on the chosen design and quality. The backing can be jute or cotton. The face is mostly from acrylic. The yarn is put on a creel (a bar with skewers) behind the tufting machine, and then fed into a nylon tube that leads to the tufting needle. The needle pierces the primary backing and pushes the yarn down into a loop. Photoelectric sensors control how deeply the needles plunge into the backing, so the height of the loops can be controlled. A looper, or flat hook, seizes and releases the loop of yarn while the needle pulls back up; the backing is shifted forward and the needle once more pierces the backing further on. To make cut pile, a looper facing the opposite direction is fitted with a knife that acts like a pair of scissors, snipping the loop. This process is carried out by several hundred needles (up to 1,200 across the 12 foot [3.7 ml width]), and several hundred rows of stitches are carried out per minute. One tufting machine can thus produce several hundred square yards of carpet a day. The process does not produce wastes that can be harmful to the environment.

#### **2. Source of Technology**

The technology for the production of floor and wall covering of textile can be sourced from Europe, china, India etc. The supplier whose address is given below can be contacted.

Cobble Black Burn Limited,

Tel 44 (0)1254 55121,

Fax 44 (0)1254 671125

## B. ENGINEERING

### 1. Machinery and Equipment

The production of the carpet can be done using several kinds of processing machinery depending on factors like productivity, cost and working area requirement. The choice of machinery for this project was done by taking most of the above set of factors. The list of selected machinery for the envisaged project is presented in Table 5.1.

**Table 5.1**

**MACHINERY AND EQUIPMENT REQUIREMENT AND COST**

Sr. No.	Name of Machine	Type	Qty	Cost ( 000 Birr)		Total Cost (000 Birr)
				FC	LC	
1	Tufting Machine for cut & loop piles, high speed, attachment for patterns, complete with accessories	4 m Width	1	375	2,125	2,500
2	Cone winding machine		1	7.5	42.5	50
3	Latex Sprayer		1	1.5	8.5	10
	<b>Grand Total</b>			<b>384</b>	<b>2,176</b>	<b>2,560</b>

### 2. Land, Building and Civil Works

The total area requirement of the project is 800 m<sup>2</sup>. The total built-up area requirement of the project is 400 m<sup>2</sup>. Out of the total built-up area, 250 m<sup>2</sup> will be covered by production facility, 100m<sup>2</sup> for store of raw material and finished product and 50m<sup>2</sup> for office building. The total cost of building at a cost of 2,300 Birr /sq mt is Birr 920,000.

According to the Federal Legislation on the Lease Holding of Urban Land (Proclamation No. 272/2002) 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 5000 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.

The land lease price in the industrial zones varies from one place to the other. For example, a land was allocated with a lease price of Birr 284 /m<sup>2</sup> in Akakai-Kalti and Birr 341/ m<sup>2</sup> in Lebu and recently the city's Investment Agency has proposed a lease price of Birr 346 per m<sup>2</sup> for all industrial zones.

Accordingly, in order to estimate the land lease cost of the project profiles it is assumed that all manufacturing projects will be located in the industrial zones. Therefore, for this profile, which is a manufacturing project a land lease rate of Birr 346 per m<sup>2</sup> 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 5.2 shows incentives for lease payment.

**Table 5.2**

**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 period of lease for industry is 60 years.

Accordingly, the total lease cost, for a period of 60 years with cost of Birr 346 per m<sup>2</sup>, is estimated at Birr 16.61 million of which 10% or Birr 1,660,800 will be paid in advance. The remaining Birr 14.95 million will be paid in equal installments with in 28 years, i.e., Birr 533,829 annually.

## VI. MANPOWER AND TRAINING REQUIREMENT

### A. MANPOWER REQUIREMENT

The envisaged plant requires 24 workers for one shift. Of these nine are technical workers. The total yearly salary and benefit amounts to Birr 327,000. The details are shown in Table 6.1.

**Table 6.1**  
**MANPOWER REQUIREMENTS & ANNUAL LABOUR COST**

Sr. No.	Description	Req. No.	Monthly Salary ( Birr )	Annual Salary ( Birr )
1	Manager	1	3,000	36,000
2	Textile Technologist	1	2,500	30,000
3	Technicians	3	2,100	25,200
4	Helper Technicians	3	1,500	18,000
5	Operators	2	1,200	14,400
6	Administrator	1	2,500	30,000
7	Accountant	1	1,500	18,000
8	Cashier	1	800	9,600
9	Purchaser	1	1,500	18,000
10	Store keeper	1	700	8,400
11	Salesman	1	1,500	18,000
12	Driver	1	550	6,600
13	Guard	5	1,750	21,000
14	Cleaners	2	700	8,400
	<b>Sub-Total</b>	<b>24</b>		<b>261,600</b>
	Employee benefits 25%of salary bases			65,400
	<b>Grand Total</b>	<b>24</b>		<b>327,000</b>

## **B. TRAINING REQUIREMENT**

On the job demonstration of the operation of the machine would be enough for workers with background knowledge on textile machines. No special training is required.

## **VII. FINANCIAL ANALYSIS**

The financial analysis of the textile wall and floor covering project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 year
Source of finance	30 % equity 70 % loan
Tax holidays	3 years
Bank interest	8.5%
Discount cash flow	8.5%
Accounts receivable	30 days
Raw material local	30 days
Raw material import	90 days
Work in progress	1 days
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 6.44 million, of which 34 per cent will be required in foreign currency. The major breakdown of the total initial investment cost is shown in Table 7.1.

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

<b>Sr. No.</b>	<b>Cost Items</b>	<b>Local Cost</b>	<b>Foreign Cost</b>	<b>Total Cost</b>
1	Land lease value	1,660.80	-	1,660.80
2	Building and Civil Work	920.00	-	920.00
3	Plant Machinery and Equipment	384.00	2,176.00	2,560.00
4	Office Furniture and Equipment	100.00	-	100.00
5	Vehicle	450.00	-	450.00
6	Pre-production Expenditure*	401.23	-	401.23
7	Working Capital	356.89	-	356.89
	<b>Total Investment Cost</b>	<b>4,272.92</b>	<b>2176.0</b>	<b>6,448.92</b>

\* *N.B Pre-production expenditure includes interest during construction ( Birr 301.23 thousand, and Birr 100 thousand costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

## **B. PRODUCTION COST**

The annual production cost at full operation capacity is estimated at Birr 2.22 million (see Table 7.2). The raw material cost accounts for 41.88 per cent of the production cost. The other major components of the production cost are cost depreciation, financial cost and direct labour which account for 18.98 %, 17.56% and 7.07% respectively. The remaining 14.50 % is the share of utility, repair and maintenance labour overhead and other administration cost.

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

<b>Items</b>	<b>Cost</b>	<b>%</b>
Raw Material and Inputs	929.2	41.88
Utilities	23.79	1.07
Maintenance and repair	128.00	5.77
Labour direct	156.96	7.07
Labour overheads	65.40	2.95
Administration Costs	104.64	4.72
Land lease cost	-	-
<b>Total Operating Costs</b>	<b>1,407.99</b>	<b>63.46</b>
Depreciation	421.23	18.98
Cost of Finance	389.64	17.56
<b>Total Production Cost</b>	<b>2,218.86</b>	<b>100</b>

**C. FINANCIAL EVALUATION****1. Profitability**

Based on the projected profit and loss statement, the project will generate a profit through out its operation life. Annual net profit after tax will grow from Birr 2.98 million to Birr 3.03 million during the life of the project. Moreover, at the end of the project life the accumulated cash flow amounts to Birr 7.07 million.

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

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 31 \%$$

### **4. Payback Period**

The pay back period, also called pay – off period is defined as the period required to recover 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 20.37 % 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 8.5% discount rate is found to be Birr 4.17 million which is acceptable.

## **D. ECONOMIC BENEFITS**

The project can create employment for 24 persons. In addition to supply of the domestic needs, the project will generate Birr 2.66 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. It has also a backward linkage effect with cotton yarn producers.

