60. PROFILE ON OSTRICH LEATHER AND FEATHER PROCESSING

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I. SUMMARY

This profile envisages the establishment of a plant for the production of ostrich leather (wet blue) and ostrich feather mattresses and pillows with yearly capacity of 30,000 squire feet of leather and 200 units of mattress and pillows per annum.

The present demand for the proposed product is estimated at 215,000 skins per annum. The demand is expected to reach at 405,415 skins by the year 2020 .

The plant will create employment opportunities for 32 persons.

The total investment requirement is estimated at Birr 9.37 million, out of which Birr 3.77 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 28 % and a net present value (NPV) of Birr 7.87 million, discounted at 8.5%.

II. PRODUCT DESCRIPTION AND APPLICATION

Ostrich feather is used to stuff pillows and mattresses and other quilts, etc. The ostrich leather is used for making various leather articles. It is expected that it will have a higher demand because it will give a luxurious housing comfort.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Current Demand and Supply

Ostrich leather is regarded as an exotic leather product alongside crocodile, snake, lizard, camel, etc. Ostrich skins are the largest in terms of volumes traded in the global exotic

skins market. Countries that produce ostrich skins, but do not have the economies of scale, or quality and expertise in their manufacturing facilities, export ostrich skins at the raw and crust stages. The main uses of ostrich leather are in designer items such as handbags, belts, cowboy boots, dress shoes, and luggage. However, there is also demand in upholstery in both furniture and car seating.

Feathers have a wide variety of applications, ranging from feather dusters to automobile manufacturing to fashion accessories. They are also used to stuff pillows and mattresses and other quilts, etc. Feather grading consist of 5 major groups and is divided to further major classes. Feathers are graded on size, shaft weight, shape, density and regularity.

Commercial ostrich farming began in South Africa approximately 150 years ago, and South Africa has had a virtual monopoly on the industry. There were estimated to be just under 500, 000 commercially-bred ostriches in the world in 2003, with around 350,000 of these in South Africa. The premium strain of ostrich is the "African Black," which originated on the ranches of South Africa through various forms of selective breeding.

South Africa is at the centre of the ostrich leather industry. From the ostrich abattoirs of the region, it receives around 200,000 skins a year; from elsewhere in the world it receives around 15, 000 skins. South African tanneries export around 90% of its finished leather to manufacturers in Europe and East Asia where it is made into gloves, hand bags, shoes, travel goods, wallets, etc. The remaining 10% goes to South African manufacturers of the same range of items.

Accordingly, it can be estimated that the total world demand for ostrich leather is about 215,000 skins per annum.

2. Projected Demand

According to Ostriches On-Line, the ostrich market could be in for a huge increase in demand in the near future. However, in order to be conservative an average annual

growth rate of 5% is used to project the demand for the product (see Table 3.1). The market share of locally produced ostrich leather could capture is estimated at 15%.

Table 3.1

PROJECTED DEMAND FOR OSTRICH SKINS

Year	Projected Demand (in pieces)	
	Total World	Ethiopia's Share
2008	225,750	33,863
2009	237,038	35,556
2010	248,889	37,333
2011	261,334	39,200
2012	274,401	41,160
2013	288,121	43,218
2014	302,527	45,379
2015	317,653	47,648
2016	333,536	50,030
2017	350,212	52,532
2018	367,723	55,158
2019	386,109	57,916
2020	405,415	60,812

3. Pricing and Distribution

The price of ostrich skins reflects supply factors rather more than demand. The overproduction in 2002, led to a decrease in skin price and it took the reduction in slaughtering in subsequent years to stabilize the market. However, the increase in demand for ostrich meat in Europe from 2005 once again led to over supply of skins and a subsequent drop in prices.

The international prices for skins in October 2005 was USD 16 per square foot for a grade one skin (a skin is approximately 15 square foot per bird); USD 14 per square foot for a grade two skin; USD 12 per square foot for a grade three skin and USD 11 per square foot for a grade four skin.

For the purpose of financial analysis a factory get price of USD 15 (Birr 133.5) per squire foot is adopted.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

The envisaged plant is intended to process ostrich leather and feather. The raw material for these products are ostrich skin and feather. The skin will be processed in the plant to produce finished leather that will find wide application in making various leather articles. The ostrich feather is very useful to produce mattresses and pillows. The plant assumes that there will be substantial ostrich farm and ostrich meat processing plant. The plant under study will, therefore, procure the skin and feather to use as inputs. In view of this situation, and on the basis of the market study, the envisaged plant will have an annual processing capacity of 2,000 skins per year. The plant will operate single shift of 8 hours a day and for 300 days a year.

2. Production Programme

In order to carry out gradual production build-up, the plant will start operation at 65% of its installed capacity. This will create an opportunity for skill development and establishment of sufficient market outlets. Production will be made to grow to 75%, 85% and 100% in the second, third and fourth years, respectively. Production build-up programme is shown in Table 3.2.

Table 3.2

PRODUCTION PROGRAMME

Year	1	2	3	4 and above
Capacity utilization (%)	65	75	85	100
Production				
a) Ostrich leather (ft^2)	19,500	22,250	25,500	30,000
b) Mattresses & pillows (units)*	130	150	170	200

* One unit is equivalent to one mattress and two pillows

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The raw materials required for the processing plant are Ostrich skin and feather. These materials will be obtained from local market.

As the plant is a skin processing plant, it is not different from the leather processing plant of sheep skin and goat skin. Thus, auxiliary materials required in a tannery are applied in ostrich skin processing unit operation. Annual requirement of raw and auxiliary materials at full capacity production is given in Table 4.1 below.

Table 4.1

ANNUAL REQUIREMENT OF RAW AND AUXILIARY MATERIALS AND COST (AT FULL CAPACITY)

Sr. No.	Description	Qty	Cost ('000 Birr)		
			LC	FC	TC
	A. **Raw Materials**				
1	Ostrich skin (2000 pcs)	30,000 ft2	145.0	-	145.0
2	Ostrich feather	Reqd	7.5	-	7.5
	Sub-total		152.5	-	152.5
	B. **Auxiliary Materials**				
1	Chrome salt	3 ton	3.3	7.8	7.8
2	Common salt	2.2 ton	-	-	3.3
3	Calcium hydroxide	1.6 ton	-	0.535	0.535
4	Sodium sulphate	1.6 ton	-	2.3	2.3
5	Ammonium sulphate	0.72 ton	-	0.63	0.63
6	Sulphuric acid	0.54 ton	-	0.54	0.54
7	Sodiumcarbonate	0.45 ton	-	-	0.45
8	Bating agent	0.27 ton	-	1.7	1.7
9	Calcium formate	0.20	-	0.28	0.28
	Sub-total	-	**3.3**	**17.535**	**20.835**
	Bank & customs & Insurance Costs		5.0	-	5.0
	Total		**8.3**	**17.535**	**25.835**
	Grand Total		**160.8**	**17.535**	**178.335**

B. UTILITIES

Utilities required by Ostrich skin processing plant include electricity, water and fuel oil.

Electricity is used to run machinery and equipment, and a total of 100,000 kWh is required. At the rate of Birr 0.474 per kWh, the annual cost of electricity is Birr 47,400. Water is required both as process water and for drinking. The annual requirement of process water is 10,000 m^3, while an estimate of 200 m^2 of water is required for drinking and general purposes. At an average rate of Birr 10 per m^3, the annual water cost will be Birr 102,000.

Fuel oil is used for hot water production. The annual estimate of fuel oil is 3500 kgs, which costs Birr 18,935.

Thus, the total cost of electricity, water and fuel oil will be Birr 168,335.

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The process of Ostrich finished leather production consists of the following unit operations:

A. Wet Blue Leather Production

- Pre-soaking of dried raw stock
- Fleshing
- Trimming
- Weighing
- Soaking

- Fleshing
- Liming
- Unhairing
- Fleshing
- Trimming
- Weighing
- Picking
- Chrome tanning
- Wringing / setting out
- Wet blue leather

B. Crust Leather Production

- Side cutting
- Splitting
- Shaving
- Trimming
- Weighing
- Retaining / Dyeing
- Wringing
- Setting out
- Drying
- Measuring

C. Finished Leather Production

- Conditioning
- Staking
- Buffing
- Dust Removing
- Impregnating

- Plating
- Coating
- Embassing
- Plating
- Grading
- Measuring & packing

Thus, to produce finished Ostrich leather the dried skin has to pass all the three stages – wet blue stage, crust leather stage and finished leather stage. This would require high investment since the envisaged plant has to be operated at a larger economies of scale. Ostrich population available in SNNPRS does not, however, provide opportunity for establishing a tannery that will have a capacity to manufacture finished Ostrich leather. Considering the experience of other countries in Africa and other parts of the world, countries that produce Ostrich skins, but do not have the economies of scale, or quality and expertise in their manufacturing facilities, export ostrich skins at the raw and crust stages. South Africa is an important processor of finished skins for the main leather manufacturers in Japan. Other African countries that are engaged in ostrich skin processing are Zimbabwe, Namibia, Botswana, etc. Botswana markets ostrich skins through direct sales to tanneries in South Africa.

In view of the above situation, the envisaged plant will be engaged plant in the production of wet blue ostrich leather. The product can be exported to countries like South Africa which have long years of experience in the production of finished ostrich leather.

The effluent from the tannery needs to be properly treated inorder to avoid serious damage of the environment. A small treatment plant would therefore be required.

2. Source of Technology

The following supplier can be contacted for machinery and equipment of processing ostrich skin into wet-blue leather.

Hohen Forst MachineryCo.
300 Forst AVA Amsterdam
New York 12010, USA
Tel. 1-518-842-0011
Fax. 1-518-842-3771
E-mail: HOHENMACH@aol.com.

B. ENGINEERING

1. Machinery and Equipment

The list of machinery and equipment required for the tannery that produces wet-blue ostrich leather is given in Table 5.1.

Table 5.1

LIST OF MACHINERY AND EQUIPMENT REQUIREMENT AND COST

Sr. No.	Description	Qty	Cost ('000 Birr)		
			LC	FC	TC
1	Mixer	2	-	60	60
2	Drum	2	-	600	600
3	Fleshing machine	2	-	250	250
4	Wringing / setting out machine	1	-	1,500	1,500
5	Knife (Manual work)	2	-	4.0	4.0
6	Balance (Heavy Duty)	1	-	80	80
7	Measuring machine	1	-	135	135
8	Hot water generator		-	150	150
9	Scales, hand tools, transport wagons, pallets, work tables, wooden horses and pippings	Reqd	-	145	145
10	Treatment plant	-	-	500	500
	FOB price		-	3,421.44	3,421.44
	Freight, Insurance, Customs, Bank charges, materials handling costs				350
	CIF Landed Cost		**350**	**3,421.44**	**3,771.44**

2. Land, Building and Civil Works

The plant requires a total of 5,000 m^2 area of land, out of which 2,000 m^2 is built-up area which includes raw stock store, finished leather store, chemicals store, production hall, administrative building, and other general purpose buildings. At the rate of Birr 1.0 per m^2 as land lease value for 80 years, and Birr 2,000 per m^2 as unit cost of building, the total investment for land, building and civil works will be Birr 4.4 million.

3. PROPOSED LOCATION

The location of ostrich leather and feather processing plant is determined on the basis of availability of ostrich population and infrastructure. For this two woredas, namely Hamer and Arbaminch zuria are identified. Considering distribution of projects among SNNPRS woredas, Hamer woreda is selected as appropriate. It is, therefore, suggested that the processing plant be established in Dimeka town.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

Ostrich skin processing plant requires skilled workers to operate the production equipment indicated in Table 5.1 above. The managerial work of the factory will also be carried out by administrative workers. The details of manpower required by the plant and related costs are given in Table 6.1.

B. TRAINING REQUIREMENT

The production workers, the supervisor and the technicians will be provided one month training on the various activities involved in the production process. A total of Birr 20,000 is earmarked to execute the training programme.

Table 6.1

MANPOWER REQUIREMENT AND LABOUR COST (BIRR)

Sr. No.	Job Title	Req. No.	Monthly Salary	Annual Wages
	A. Administration			
1	Plant manager	1	2,000	24,000
2	Executive secretary	1	800	9,600
3	Personnel officer	1	1,000	12,000
4	Finance officer	1	1,200	14,400
5	Sales man	1	800	9,600
6	Store man	1	800	9,600
7	Clerk	1	450	5,400
8	Secretary	1	600	7,200
9	Time keeper	1	450	5,400
10	General service	4	350	10,800
	Sub-total	**13**	**-**	**114,000**
	B. Production			
1	Production supervisor	1	1,200	14,400
2	Technicians	3	700	25,200
3	Skilled workers	10	600	72,000
4	Unskilled workers	5	285	17,100
	Sub-total	**19**	**-**	**128,700**
	Workers' benefit (25% BS)	-	-	60,675
	Total	**32**	**-**	**303,375**

VII. FINANCIAL ANALYSIS

The financial analysis of the ostrich leather and feather processing project is based on the data presented in the previous chapters and the following assumptions:-

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

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 9.37 million, of which 29 per cent will be required in foreign currency.

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

Table 7.1

INITIAL INVESTMENT COST

Sr. No.	Cost Items	Total Cost ('000 Birr)
1	Land lease value	400.0
2	Building and Civil Work	4,000.0
3	Plant Machinery and Equipment	3,771.4
4	Office Furniture and Equipment	125.0
5	Vehicle	200.0
6	Pre-production Expenditure*	823.1
7	Working Capital	49.4
	Total Investment cost	**9,369.0**
	Foreign Share	29

** N.B Pre-production expenditure includes interest during construction (Birr 673.11 thousand) training (Birr 20 thousand) and Birr 130 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 2.12 million (see Table 7.2). The material and utility cost accounts for 16.37 per cent, while repair and maintenance take 8.49 per cent of the production cost.

Table 7.2

ANNUAL PRODUCTION COST AT FULL CAPACITY ('000 BIRR)

Items	Cost	%
Raw Material and Inputs	178.34	8.41
Utilities	168.34	7.94
Maintenance and repair	180	8.49
Labour direct	189.38	8.93
Factory overheads	94.18	4.44
Administration Costs	114	5.38
Total Operating Costs	924.24	43.58
Depreciation	659.64	31.10
Cost of Finance	537.01	25.32
Total Production Cost	**2,120.89**	**100**

C. FINANCIAL EVALUATION

1. Profitability

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

The income statement and the other indicators of profitability show that the project is viable.

2. Break-even Analysis

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

$$BE = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 71\ \%$$

3. Pay Back Period

The investment cost and income statement projection are used to project the pay-back period. The project's initial investment will be fully recovered within 4 years.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 28% and the net present value at 8.5 % discount rate is Birr 7.87 million.

D. ECONOMIC BENEFITS

The project can create employment for 32 persons. In addition to supply of the domestic needs, the project will generate Birr 4.63 million in terms of tax revenue. The establishment of such factory will have a foreign exchange earning effect to the country through exporting its products.