



PROJECT PROFILE ON PERFUME PRODUCTION



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ADDIS ABEBA CITY ADMINISTRATION INVESTMENT COMMISSION
A.A

PROJECT PROFILE ON PERFUME PRODUCTION

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I. Executive summary

This project profile is prepared to assess the viability of running Perfume production factory, in Addis Abeba city administration. Hence Market, Technical, Organizational and Financial study was made to investigate the viability of the envisaged project.

This project profile on Perfume production factory has been developed to support the decision – making process based on a cost benefit analysis of the actual project viability. This profile includes marketing study, production and financial analysis, which are utilized to assist the decision-makers when determining if the business concept is viable. Ethiopia has a private sector driven Perfume production industry. According to the latest data sourced from Ethiopian investment commission (EIC) here are more than 88 registered Perfume manufacturing factories in Ethiopia. Out of these only 52 are on operational stage while others are on pre-implementation and implementation stage

The location of the plant will be decided on the basis of access to raw materials, infrastructure namely, power, water, transport and telecom to easy access to international market. The most locally available raw materials for Perfume production are maize, wheat bran, rice bran and etc.

The factory at full capacity operation can process 257 million quintals of lemongrass to produce 40,000kg of perfume , per year based on 260 working days and their shifts of 24 hours per day.

The total investment capital including establishing the factory is Birr 253.40 million. Out of the total investment capital, the owners will cover Birr 177 million (30 %) while the remaining balances amounting to Birr 76 million (70 %) will be secured from bank in the form of term loan.

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As indicated in the financial study, the cash flow projection of the project shows surplus from the first year on. The net cash flows of the project range from Birr 26 Million in the first year to Birr 40 million at the end of the 10th year of operation. At the end of the 10th year of operation period the cumulative cash balance reaches Birr 408 million. The Benefit-cost ratio and Net present value (NPV) have been calculated at 17% discount factor (D.F) for 10 years of the project activity. Accordingly, the project has NPV of 204.57 million Birr at 17%D.F. and the benefit-cost ratio of 1.13 at 17% D.F.

Therefore, from the aforementioned overall market technical and financial analysis we can conclude that the Perfume production business is a viable and worthwhile.

1. BACKGROUND INFORMATION

1.1 Introduction

This document was undertaken to show perfume production investment profile in Addis Ababa. In compiling the report, information from Addis Ababa investment commission, Addis Ababa trade and industry development, Ethiopian custom commission and published sources have been augmented.

Presently, in spite of high demand and its crucial importance, perfume products are in short supply and also significant amounts are imported from abroad. This causes freight transportation costs from the supplier to the Djibouti Port to the users to be high and in some cases inefficient and unreliable.

The provision of adequate perfume is fundamental importance to Ethiopia's present and future demand. In Ethiopia, the demand for perfume is expected to increase considerably in the next few decades as a result of increased population growth, urbanization and increasing income levels. Thus, identifying potential of perfume production is crucial in a country like Ethiopia.

1.2 Product Description and Application

Perfumes can be defined as substances that emit and diffuse a pleasant and fragrant odor. They consist of manmade mixtures of aromatic chemicals and essential oils. Until the nineteenth century perfumes were usually composed of natural aromatic oils. Nowadays, most perfumes are synthetic and may contain many components.

Perfume is used to give a pleasant and desirable scent to a person's body, typically with the aim of increasing self-appeal and self-confidence. Scents are reported to enhance health and well-being by

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improving mood, reducing anxiety and stress, increasing cognitive function, and improving sleep. More specifically, perfume can be used for the following application.

Fragrance: perfume has been historically used primarily for fragrance. It helps keep unwanted body odor at bay and ensures that you smell good throughout the day.

Enhances Mood: one of the main benefits of wearing perfume is enhancing the mood. Perfume helps lift your spirits. You can also wear a perfume that reflects your mood, to project it better. Whether you feel playful, mischievous, timid or even reserved, perfumes offer many different kinds of smells for different moods.

Boosts Confidence: Just like a pretty dress, a good perfume can boost one's confidence and ensure that he/she gets through the day without feeling conscious of his/her body odor. A dash of fragrance can work wonders to one's personality and boost morale to fight against all odds.

Makes attractive: sense of smell is one of the most important of the five senses. Sometimes, you can simply get attracted to someone because of the way they smell. Perfumes are rich in pheromones and make you attractive.

Aphrodisiac: many perfumes sometimes function like a natural aphrodisiac. Certain types of perfumes contain pheromones, which have aphrodisiac properties. It explains why people get attracted to someone because of their perfume.

Boosts health: there is no scientific evidence to ascertain the efficacy of perfume's health boosting properties. However, perfume helps enhance the mood, which can keep stress and other anxiety related issues at bay.

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Aromatherapy: perfume has many relaxing and therapeutic benefits. Citrus fruit, floral and winter spice perfumes help calm the mind and soothe the body. These perfumes ensure one's stress levels are in control.

Treats Insomnia: perfume helps you sleep better at night. Perfumes, which contain essential oils, can help you relax and enjoy a peaceful slumber at night.

1.3 Project Location and Justification

1.3.1 Location of Addis Ababa

Addis Ababa is the seat of the Ethiopian federal government. It is located on the central highlands of Ethiopia in the middle of Oromia Region. The absolute location is around the intersection point of 9°1'48''N latitude and 38°44'24''E longitudes. This is very near to the geographical center of the country. It is, therefore, equidistant to the peripheral areas or is equally accessible to almost all parts of Ethiopia. Addis Ababa is located on a well-watered plateau surrounded by hills and mountains. The city is in the highlands on the edge of the Ethiopian rift valley or the eastern slopes of the Entoto Mountain ranges bordering the Great Rift Valley. The total area of Addis Ababa is about 540 km² of which 18.2 km² are rural. Addis Ababa's built-up urban area spans 474 km². It is also the largest city in the world located in a landlocked country.

1.3.2 Demography of Addis Ababa

According to the CSA (2013) population projection, Ethiopia's total population reaches about 105 million people in 2022. Of the total population 22.9% (24 million people) live in urban areas. Ethiopia's urban population is expected to triple by 2037 (World Bank, 2015). Addis Ababa hosts

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an estimated 3,859,638 people. Currently, Addis Ababa is experiencing an annual growth rate of 3.8% and is estimated to reach 4,696,629 inhabitants by 2032 (CSA, 2015).

1.3.3 Economic activity of Addis Ababa

The transformation of Addis Ababa has especially been rapid since 1991. According to the data from the city's Bureau of Finance and Economic Development (2006), per capital income of Addis Ababa has grown from USD 788.48 in 2010 to USD 1,359 in 2015. The city also achieved a decline in the poverty index from a high of 29.6 in 2012 to 22.0 in 2014. Moreover, the current poverty headcount index for Addis Ababa is estimated at 18.9 while the poverty severity account for 5 and 1.8 index points respectively. Even though, the poverty status of Addis Ababa has an improvement over previous years, there is still much work to be done to curb both the incidence and severity of poverty.

The major contributor to the economic growth of the city is the implementation of publicly financed mega urban projects like condominium housing, the Light Rail Transit, the international airport and industrial zone development (The state of Addis Ababa, 2017). The existence of international large and medium-size enterprises in and around Addis Ababa have also significant role in creating huge opportunity for employment and technology transfer. Furthermore, there are strong demand for goods and services following the existence of many embassies and inter-governmental organizations like the African Union, the United Nations Economic Commission for Africa.

The manufacturing sector's contribution to Addis Ababa's GDP is high. Despite the fact that 86% of the industries in the city are micro and small scale (cottage and handicrafts, and small-scale), the majority of the country's large and medium scale industries are found in the city. Noticeable increases are also registered currently in other aspects of industrial growth.

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The service sector is both the largest contributor to the city's economy and the largest employer. It contributes to 76.4% of the city's GDP while industry's share makes up (almost all) the rest. This sector is dominated by three major sub-sectors: Transport and communication; Real estate, Renting and Business services; and Trade, Hotel and Restaurants. According to the state of Ethiopian Cities 2015 report, the service sector has also been responsible for more than 50% of the growth in the estimated annual growth of the city's GDP. Although 75% of employment in the city is also generated in the service sector, a large proportion of the employed work in low skill and low paying jobs as shop salespersons, petty and 'gullit' traders, sales workers in small shops, domestic helpers or doorkeepers and restaurant service workers.

Analysis of the economic structure of Addis Ababa reveals that the services sectors (63%) dominates with industry (36%) in second place indicating that these sectors account for almost all of the Addis Ababa's GDP (The State of Addis Ababa, 2017).

Addis Ababa has a great share in the economy of the country due to its attractiveness to businesses, companies, individuals and foreign direct investment. Overall primacy index of the city is 24.8 based on urban employment and unemployment survey (CSA 2015). According to the State of Addis Ababa 2017 report, the simultaneous high rates of economic growth and urbanization in Addis Ababa indicates a likely further rising dominance of the city in Ethiopia's economy as well as growing agglomeration of economic activities in and around the city.

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1.4. Why is it beneficial to invest in Addis Ababa?

Addis Ababa is the largest and most economically significant city in the country. Ethiopia's urban population share is only 17 percent (as of 2012, World Bank 2015). The city is the only urban area in Ethiopia capable of delivering scale economies in terms of concentrated demand, specialization, diversity and depth of skills, innovation, and technology transfers. Thus, investors will be benefited in getting capable human power from the market.

The capital is the country's main industrial hub. The city dominates industrial capacity in almost all the branches of light manufacturing that Ethiopia prioritizes. As a result Addis Ababa completely dominates production in various subsectors. This can be taken as the political and social stability of the city.

Overall, the city has a beautiful environment, favorable location, and strong industrial base. Its advantage as an economic powerhouse of the country and human resource center are the most attractive features for local and overseas investors.

Moreover, investors will be getting a comprehensive set of incentives for priority sectors. These include:

- Customs duty free privilege on capital goods and construction materials, and on spare parts whose value is not greater than 15% of the imported capital goods' total value.
- Investors have the right to redeem a refund of customs duty paid on inputs (raw materials and components) when buying capital goods or construction materials from local manufacturing industries.
- Income tax exemption of up to 6 years for manufacturing and agro-processing, and up to 9 years for agricultural investment.

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- Additional 2-4 years income tax exemption for exporting investors located within industrial parks and 10-15 years exemption for industrial park developers.
- Loss Carry forward for half of the tax holiday period. Several export incentives, including Duty Draw-Back, Voucher, Bonded Factory, and Manufacturing Warehouse, and Export Credit Guarantee schemes.

1.4.1. The city benefit from the investment

The city will be benefited from investment. These are discussed below.

- Employment opportunity

Investment is expected to provide direct and indirect employment. These range from unskilled casual workers, semi-skilled and skilled employees.

- Improving growth of the economy

Through the use of locally available materials and exporting products, the investment contributes towards growth of the economy by contributing to the growth of domestic product. These eventually attract taxes including VAT which will be payable to the government hence increasing government revenue while the cost of local materials will be payable directly to the producers. In addition, domestic products save foreign exchange and exports also bring money to the country.

2. Marketing study

2.1 Market analysis summary

The current drive and emphasis by the government on the diversification of the industrial base away from the other sector presents an opportunity for production industry to a valuable contribution towards achieving goal. Having undertaken a thorough and comprehensive research of the market we realized that there was a vast opportunity for domestic products. Aware of the fact that operating in such a market is largely dependent on good networking; the promoter intends to establish networks and strategic relationships with various wholesalers and retailers to ensure a steady stream of orders. In so doing, the owners intend to ensure that the products they produce are of extremely high quality and fully serve the customers purpose.

2.2 The Supply of Perfume

2.2.1 Local Supply

The demand for essential perfume in Ethiopia is met through domestic production and import. According to the information obtained from Ethiopian Investment Commission, 88 companies received investment license for the production of perfume and related works. Of these companies, 54 are in operation, 10 are in implementation and 24 are in the pre-implementation phase. In the year 2021, these companies are reported to produce 39,632 kg of perfume mainly from *Commiphora* spp, *Boswellia* spp, *Cinnamomum cassia*, *Juniperus procera*, *Echinops* spp, *Olea europaea* subsp. *Africana*, *Otostegia* spp, *Ocimum* spp, *Artemisia* spp, *Cymbopogon citratus*, *Cyperus bulbosus*, and *Myrtus* co. In estimating the current (2022) domestic supply, increase by 2% was considered. Accordingly, the present (year 2022) local supply for perfume is estimated at 40,425 kg. It is also

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estimated that the average increase in domestic supply from 2023 to 2033 will increase by 2.5 percent.

2.2.2 Import

As shown in table 1, import of perfume has been growing from year to year with minor fluctuations. The yearly average level of import which was about 470,291 kg during the period 2012-2018 has increased to a yearly average of 792,638 kg during the period 2020 - 2021. The annual average import growth rate (CAGR) of the last 10 years was 5.9%.

In terms of value, the country was on the average spending 151,478,556 Birr during the period 2012-2018. The expenditure for importing perfume has increased to annual average of Birr 184,932,137 during the period 2020-2021. The huge increase for the demand of perfume is believed to be due to the people awareness for the use of perfume.

In estimating the current effective demand for perfume, it is considered as reasonable to assume that the present demand for the perfume would be the average of the imported quantity of the recent two years i.e. year 2020 and 2021 (792,638 kg) and the domestic production (39,632 kg). Assuming increase in import will follow the same trend as the ten years' average increase (5.9%), the present (year 2022) import was calculated to be 814,489 kg. Accordingly, the present (year 2022) effective demand for perfume is estimated at 854,913 kg.

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Table 1: Import of essential oil from 2012 to 2021

Year	Quantity (Kg)	Value (Birr)
2012	434,181	110,942,220
2013	444,172	145,440,377
2014	722,248	231,961,381
2015	461,374	151,011,057
2016	213,951	55,099,429
2017	651,397	183,152,119
2018	364,713	182,743,310
2019	-	-
2020	816,164	144,416,960
2021	769,111	225,447,313

Sources: Ethiopian Revenue and customs Authority, compiled by consultant

2.3 Demand Projection

The future demand for perfume depends mainly on the growth of people awareness on the importance of perfume and increase in income of the people. During the past ten years, the annual average growth of import has been more than 5.9 % per annum. Considering the 5.9% annual growth rate and future public awareness and income increase opportunities, the demand for perfumes is expected to grow at 10% per annum.

The total demand projection worked based on the above assumptions are presented in table 2.

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Table 2: Projected demand supply gap analysis for perfume from 2023 to 2032

Year	Total perfume Demand (kg)	Projected local supply (kg)	Unsatisfied demand (kg)
2023	940,404	902,703	37,702
2024	1,034,445	953,164	81,281
2025	1,137,889	1,006,446	131,444
2026	1,251,678	1,062,706	188,972
2027	1,376,846	1,122,111	254,735
2028	1,514,531	1,184,837	329,693
2029	1,665,984	1,251,070	414,914
2030	1,832,582	1,321,004	511,578
2031	2,015,840	1,394,848	620,992
2032	2,217,424	1,472,820	744,604

The demand projection, executed in table 2 reveals that the demand for perfume will grow from 940,404 kg in the year 2023 to 1,376,846 kg and 2,217,424 tons by the year 2027 and year 2032, respectively.

As shown in table 2, the project will have unsatisfied demand for the coming 10 years' period. The projected demand will continue to be positive until 2032. It can be clearly noted that there is a huge gap between supply and demand figures, which can really be taken as the apparent demand-supply gap for perfume in Ethiopia. This is really the actual unsatisfied demand as imports have to be substituted that also helps in saving the foreign currency outflow from the country. The unsatisfied demand for perfume for the year 2032 estimated at 744,604 kg.

3. Production Technology and engineering

3.1 Technology

The production of perfume follows two steps process; essential oil extraction and perfume preparation. The following sections describe these processes taking the lemongrass as a main raw material.

3.1.1 Production Process of essential oil

Lemongrass essential oil is extracted by steam distillation of the fresh or dried leaves of lemongrass; the oil of Lemongrass is yellow in colour with a citrus grass (lemon fragrance).

Drying

The Lemongrass will be dried as soon as possible so as to diminish the risk of fungal growth before oil extraction or mushroom colonization.



Figure 1 Lemon grass

Size reduction

The dried plant material is disintegrated by feeding it into a rotary cutter that is used to reduce the size of the leaves into desired size. This can increase the yield of the oil during the process. Cutting of leaves enhance and help catalyze the production of the oil during the process. Furthermore, size reduction maximizes the surface area, which in turn enhances the mass transfer of active principle from plant material to the steam. It is an advantage also because cutting can increase the quantity of the grass fed during the operation.

Still tank

The still or retort serves as a container for the plant material. It is also a vessel in which the water or steam contacts the plant material and vaporizes its essential oils. The retort consists merely of a cylindrical container or tank with a diameter equal to or slight less than its height. The height of the still for direct steam distillation should be greater than the diameter so that the rising steam passes as much plant material as possible. It is equipped with a removable cover, which can be clamped upon the cylindrical section. A pipe (gooseneck) is attached to the top of the cylindrical section for leading the vapors to the condenser.

Condenser

The condenser serves to convert all the steam and the accompanying oil vapor into liquid. This requires the removal of an amount of heat equivalent to the heat of vaporization of the vapor plus steam and a small additional amount of heat to cool the condensate below its boiling point.

Separator

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The third part of the distillation equipment consists of the condensate receiver, decanter or oil separator. It separates the oil from the condensed water. Since the total volume of water condensed will be greater than the quantity of the oil, it is necessary to remove the water continuously. The condensate flows from the condenser into the oil separator, where the distillation water and volatile oil separate automatically.

Steam Generator

This is the part of the distillation plant that generates heat due to boiling water. It is a cylindrical container in which heater is placed. The steam outlet (which is at the top) is attached directly to the bottom of the Still. Below the container are the contacts for the wire which will be connected to the circuit box.

Storage and packaging

The oil should be stored in glass bottles or containers made of stainless steel or aluminum or galvanized iron, depending on the quantity of oil to be stored. The oil should be filled up to the brim, and the containers should be kept away from direct heat and sunlight in cool or shaded places. The oil should be stored in well-sealed glass bottles, at 5°C–25°C, and in a dry, well ventilated area away from direct heat and sunlight. Lemongrass oil can be stored for up to 3 years without affecting the quality of oil if kept in aluminum containers sealed airtight using wax. Containers should be completely filled to exclude any air and protect the oil from sunlight as air and sunlight affect the citral content.

3.1.2 Production Process of perfume

Bending

Once all of the oils for the perfume have been extracted, they need to be blended together. The oils are blended accorded to a formula that has been predetermined by a master in the perfume industry, often referred to as a "nose." One perfume can contain hundreds of different ingredients and can take multiple years to develop. Once the perfume oils have been blended, the scent is mixed with alcohol. The amount of alcohol added to the perfume oils varies depending on what the final product will be being. Most perfumes are made of about 10-20% perfume oils dissolved in alcohol and a trace of water.

Aging

Higher quality or fine perfumes are oftentimes aged for months or potentially even years after the scent has been blended. This is done to ensure that the proper scent has been created. Aging allows the different scents or notes to really blend together. Perfumes are made up of top notes that provide the scent with body as well as base notes which create an enduring fragrance.

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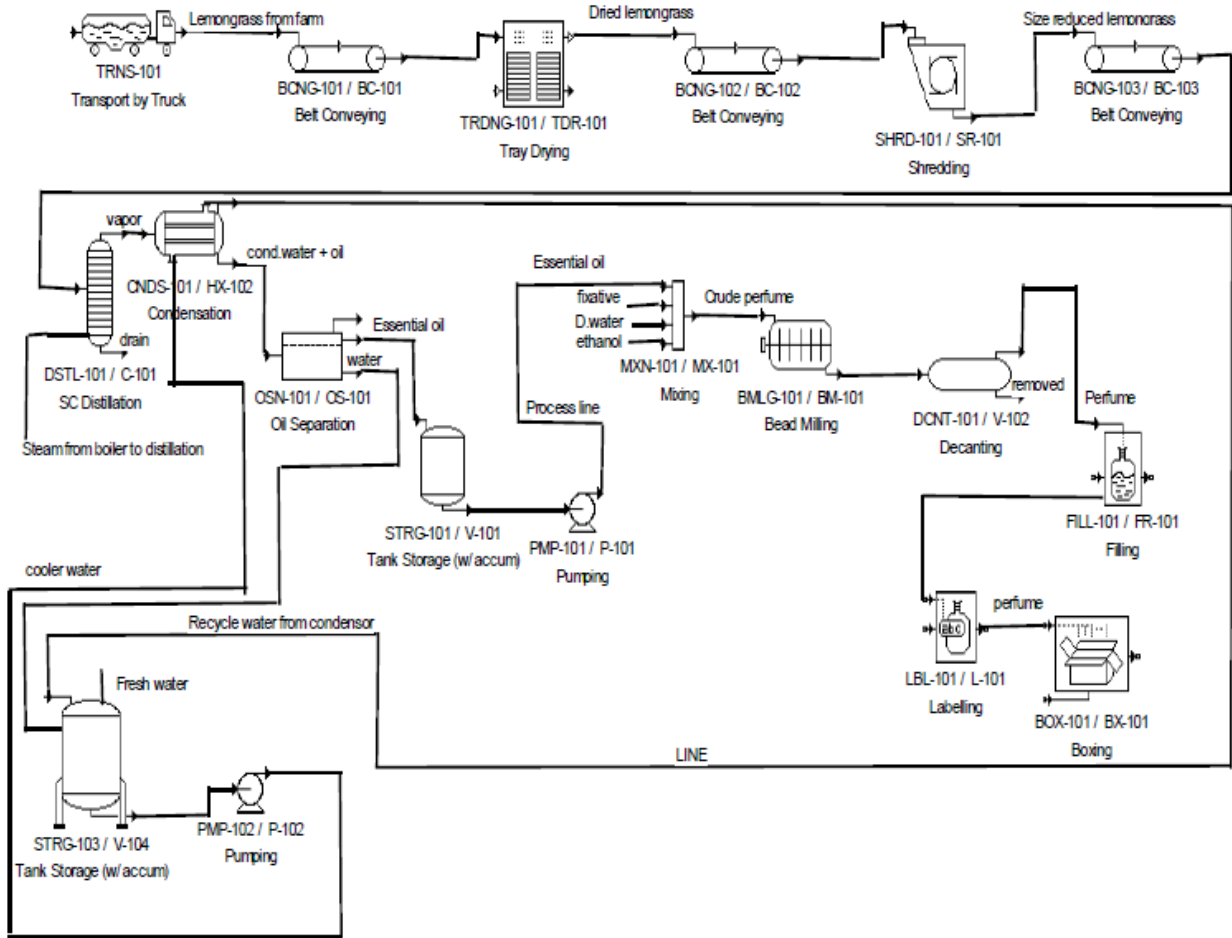


Figure 2: Process diagram of perfume formulation

3.1.3 Environmental and Social Impact Assessment

Typically, any developmental projects also trigger a set of environmental and social impacts. These environmental and social due to development projects occur in different forms. An Environmental and Social Impact Assessment (ESIA) has to be carried out to study the potential environmental and social impacts due to the production of perfume. Potential environmental and social impacts due to the production of essential oil have to be assessed as part of the ESIA study. Appropriate mitigation measures to help minimize/avoid impacts from the development have to be recommended in the

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study. The measures include avoidance measures, mitigation measures and environmental enhancement measures. Social responsibility cost estimated to be 1% of fixed investment costs.

3.1.4 Plant capacity

In determining the plant capacity of the perfume production plant, the future demands of the product and the economies of scale of the available technologies were taken into consideration. According to the data obtained from the market study, the demand for perfume raises from 37,702 kg to 744,604 kg from years 2023 to 2032.

Hence, based on the demand gap and the minimum economic of scale for perfume production, a plant with a capacity of 40,000 kg of perfume per annum is proposed.

3.1.5 Production program

It is assumed that the perfume production plant will start at 70% in the first year and will grow by 10% each year considering the market penetration traits and consumer perception for local products.

The production program of the envisaged plant is given in table 3.

Table 3: Perfume production program

Year of Production	1st Year	2nd Year	3rd Year	4th-10th Year
Capacity utilization (%)	70	80	90	100
Perfume (kg)	28,000	32,000	36,000	40,000

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3.1.6 Materials and inputs

Availability and Source of Raw Materials

This profile is developed based on the consideration that the envisaged plant will use Lemongrass which would be specially grown by the firm for this purpose. Thus, the Lemongrass shall be planted in and around Addis Ababa.

The total annual cost of raw material is estimated at Birr 264.12 million which is locally available.

The annual requirement of this raw material is shown in table 4.

Table 4: Annual raw, auxiliary materials requirement and cost at full capacity

S/No.	Description	Unit	Quantity in kg	Total cost in Birr
1	Lemongrass	Tons	5,714,286	257,142,870
2	Alcohol	Liters	4,000	480,000
3	Fixative	Lump sum		500,000
3	Packing material,	Pcs	200,000	6,000,000
	Total			264,122,870

3.2 Engineering

3.2.1 Land, buildings and civil works

The required area (m²) and construction cost for the production facilities essential for the successful operation of the processing plant is shown in Table 7. A total area ready for the processing plant is 10,000m² out of which 7,300m² is to be covered by building while uncovered area of 2,700m² is left open for parking, storage of waste materials and future expansions. In order to estimate the land lease cost of the project profiles it is assumed that all the project will be located in different land level from level 1/1 to level 4/3, their current market lease price is from 39,073.31 birr per M² to 2,800.71 birr per M² respectively. Therefore, for the profile a land lease rate of birr 3,885 per M² have been taken, which is between the ranges.

The cost of construction of building should be appropriate to the size and expected profitability of business, costs of building generally differs by the type of construction materials used, the type of foundation, wall height and location. The current building cost for simple storage and processing room is from 1,800.00 Birr per m² to 25,000 Birr per m². The total construction cost of buildings and civil works, at a rate of Birr 20,000 per m² is estimated at Birr 124.925 million. Therefore, the total cost of land lease and construction of buildings and civil works is estimated at Birr 163.775 million.

The proposed plant layout comprises the following buildings and structures.

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Table 5 Building costs

S/No	Descriptions	Total area	Estimated cost per square meter (in Birr)	Total estimated cost (in Birr)
1	Raw materials store	1,500M ²	20,000.00	30,000,000.00
2	Damping pit	9M ²	20,000.00	180,000.00
3	Cleaning section	200M ²	20,000.00	4,000,000.00
4	Perfume production line	2,000M ²	20,000.00	40,000,000.00
6	Main product store	1,500 M ²	20,000.00	30,000,000.00
7	packing materials store	500 M ²	20,000.00	10,000,000.00
8	Office and toilet	200M ²	20,000.00	4,000,000.00
9	Canteen	160M ²	20,000.00	3,200,000.00
10	Guard house	6M ²	20,000.00	120,000.00
11	parking	600M ²	2,000	1,200,000.00
12	Green area	625M ²	1,000	625,000.00
13	Fence	1,200M		1,600,000.00
	TOTAL	7,300 M ²		124,925,000.00

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Table 6 Land lease period in Addis Abeba

Sector of development activity	Period of lease	Down payment
Education, health, culture and sports	90	10%
Industry (manufacturing)	70	10%
commerce	60	10%
For urban agriculture	15	10%
For others	60	10%

Sources: - city government of Addis Abeba land development and management bureau

Table 7 Land lease floor price in Addis Abeba

S/No	Land level	Current land lease floor price per M ²	Current lease price per M ² (Market price)
1	1/1	2,213.25	39,073.31
2	1/2	2,165.47	36,825.73
3	1/3	1,900.19	34,578.15
4	¼	1,552.93	31,119.21
5	1/5	1,531.91	29,096.45
6	2/1	1327.39	27,073.71
7	2/2	1,221.18	25,050.96
8	2/3	1,191.17	23,028.21
9	2/4	1,074.39	21,005.46
10	2/5	1,027.84	18,982.71
11	3/1	994.71	16,959.96
12	3/2	960.21	14,937.21
13	3/3	927.84	12,914.46
14	¾	904.77	10,891.71
15	3/5	873.74	8,868.96
16	4/1	814.06	6,846.21
17	4/2	786.45	4,823.46
18	4/3	748.80	2,800.71

Sources: - city government of Addis Abeba land development and management bureau

PROJECT PROFILE ON PERFUME PRODUCTION

3.2.2 Machinery and equipment

One of the core machines in essential oil production plant is the De-Ionizing Machine, Steam Generator, and Distillation Unit. The total cost of machinery and equipment is estimated at about Birr 41 million birr, which is required in foreign currency. Lists of required machinery and equipment are shown in table 8.

Table 8: Lists of required machinery and equipment

S/N	Description	Quantity	Unit Cost of Equipment(Birr)	Total Cost of the Equipment(Birr)
1	De-ionizing Machine	1	12,500,000.00	12,500,000.00
2	Steam Generator	2	2,700,000.00	5,400,000.00
3	Distillation Unit (Still, Condenser, and Florentine flask)	1	7,200,760.00	7,200,760.00
4	Bead mill	2	2,500,000.00	5,000,000.00
5	Storage tank	2	1,500,000.00	3,000,000.00
6	Filling machine	1	5,000,000.00	5,000,000.00
7	Pump	2	350,000.00	700,000.00
8	Laboratory Equipment	set	2,200,000.00	2,200,000.00
Total				41,000,760.00

PROJECT PROFILE ON PERFUME PRODUCTION

3.2.3. Lists of machinery suppliers

ALIBABA

Hangzhou (Yuhang District)
969 West Wen Yi Road Yu Hang District, Hangzhou 311121
Zhejiang Province, China Tel: (+86) 571-8502-2088 Fax
(Mainland China): (+86) 571-8656-1717 Fax (Hong Kong,
Macao and Taiwan regions of China and Overseas): (+86) 571-
8376-8429

Company:	SHENZHEN PENGLAI INDUSTRIAL CORPORATION LIMITED HongKong Penglai Trading Co.,Limited
Headquarter Address:	99# by QiaoCheng Road East, Nanshan District, Shenzhen City, China
Manufacturing Location	8#Building St Gerge Industry Park,Xinyu Road,Shajing Town,Shenzhen City,China
Cel:	+86-15811882441
Phone:	+86-755-86718316
Fax:	+86-755-86718317
Email:	jackdu999@yahoo.com jackdu999@penglaipacking.com
WhatsApp:	+86-15811882441
Website:	www.penglaipacking.com www.penglaimachines.com
YouTube:	www.youtube.com/user/penglaichina www.youtube.com/user/mrjackdu007 www.youtube.com/user/cosmeticmachines

PROJECT PROFILE ON PERFUME PRODUCTION

4. Perfume production organizational structure

The selection of structure of the envisaged project is made based on the existing structure of manufacturing plants operating in the country, the capacity, complexity and technology mix of the plant. Organizational structure principles such as specialization, coordination, and departmentalization are also considered for design of structure that best suits the envisaged project

4.1 Manpower Requirement and Estimated Annual manpower costs

Table 9 Annual manpower costs

s/no	Description	Number of persons	Salary in birr	
			monthly	annually
1	General manager	1	45,000.00	540,000.00
2	executive secretary	1	15,000.00	180,000.00
3	Manager- admin. and finance	1	25,000.00	300,000.00
4	assistance manager- finance	1	20,000.00	240,000.00
5	accountant	1	15,000.00	180,000.00
6	cashier	1	10,000.00	120,000.00
7	personnel and general service	1	10,000.00	120,000.00
8	guards	5	3,000.00	180,000.00
9	driver ii	4	10,000.00	160,000.00
10	manager-production and technical	1	20,000.00	240,000.00
11	production clerk	1	4,000.00	48,000.00
12	chief quality controller	3	12,000.00	432,000.00
13	chief miller	1	10,000.00	120,000.00
14	machine operator	3	5,000.00	180,000.00
15	assistant machine operator	3	3,000.00	108,000.00
16	senior mechanics	3	12,000.00	432,000.00
17	senior electrician	3	12,000.00	432,000.00
18	store keeper	1	10,000.00	120,000.00
19	manager- commercial	1	20,000.00	240,000.00
20	purchaser	1	10,000.00	120,000.00
21	sales- manager	1	15,000.00	180,000.00
	total	38		4,672,000.00

5. Financial Analysis

5.1 General

The financial analysis evaluation of perfume manufacturing project is mainly consisted of capital investment as well as operating and maintenance costs. The capital investment costs include fixed investment costs (initial fixed investment and replacement costs) and working capital, while operating and maintenance costs comprise current expenses related to material inputs, manpower cost, utility, repair and maintenance costs, and spare parts, Overheads, Sales and distribution, interest and depreciation expenses.

The financial analysis and evaluation has been conducted taking assumptions:

1. It is assumed that about 70% of the total capital investment costs including the working capital requirement could be covered through development bank loans of short and long-term credits. The remaining balance 30% will be covered by equity capital contribution of the project owner.
2. Even though the project might secure loans under different term and conditions as well as from different financial sources, for the purpose of calculation of debt service scheduling, the current development bank of Ethiopia credit terms and conditions have been used. Consequently, It is assumed that the project will secure loan facility on the basis of 11.5 % annual interest rate.
3. Even though the estimated project production life is more 10 years, the financial analysis has been undertaken for a period interval covering the first 10 years only, during which time most of the capital assets are assumed to be depreciated, debts recovered and pay-back period accomplished.

PROJECT PROFILE ON PERFUME PRODUCTION

4. It is assumed that the project will be start up production activity at 70 % capacity. During years 2 & year 3 the projects is anticipated to gradually increase capacity utilization to reach 100% in year 4. Therefore, starting from year 4 the project will be operational at full capacity.
5. For the project under reference promotional, sales and distribution expenses have been estimated at 3% of the sales revenue.
6. Maintenance and spare parts costs are 1.5% of the fixed investment costs.
7. Furniture and fixture costs assumed to be 500,000.00

5.2 Initial Fixed investment costs

Table 10 Initial Fixed investment costs

S/No	Fixed investment type	Unit of measurement	Quantity	Unit price	Total Amount	Remarks
1	Land	Square meter	10,000	3,885 birr/M ²	38,850,000.00	The period of land lease will be 70 years and 10% of the total lease amount will be paid in the first year
2	Buildings and civil works	Square meter	7,300	lump sum	124,925,000.00	
	Sub total				163,775,000.00	
3	Machineries	set	2	Lump sum	41,000,760.00	
4	Transformer	set	1	Lump sum	2,000,000.00	
5	Weighbridge	Set	1	Lump sum	4,000,000.00	
6	Truck and vehicles	Pcs	2	Lump sum	6,000,000.00	
7	Furniture and fixture	Pcs			500,000.00	
	SUB TOTAL				53,500,760.00	
	Fixed capital investment costs				217,275,760.00	
8	pre-operational expenses				2,000,000.00	
	Working capital				34,128,000.00	
	TOTAL INVESTMENT COSTS				253,403,760.00	

PROJECT PROFILE ON PERFUME PRODUCTION

5.3 Working capital

Working capital is the financial means required for smooth operation and maintenance of a project mathematically, it is a difference between current assets and current liabilities. In the particular case of the project under consideration, the current assets comprise receivables, inventories (local and imported material inputs, spare parts, work in progress, and products ready for delivery) and cash in hand, while current liabilities comprise accounts payable to creditors.

5.4. Project Financing

Fixed capital investment costs and working capital requirements are assumed to be financed by equity capital of the owner and through loans of short and long-term credits.

The company obtains loans under different terms and condition as well as from different sources, for the purpose of calculation of debt service scheduling the current development bank of Ethiopia credit terms and conditions have been used. Accordingly, it is assumed that the company will be able to obtain loan 70% of the total investment costs for construction of different buildings for purchase of machineries. The remaining balance that of the total investment costs will be expected to be covered by equity contribution of the project promoter.

5.5 Production costs

As it is depicted in Annex Table 14 major categories of the total production costs are assembled into the following cost elements.

5.5.1 Material inputs

In the project under study the basic material inputs (see in table 4) are lemongrass, alcohol, fixative and, packing materials etc. Therefore, the current prevailing local and international market prices have been used for estimation of material inputs costs. At full capacity operation the material inputs costs are estimated at Birr 264 million per annum.

5.5.2 Utilities

In estimating costs of utility expenses for operation and maintenance of the project, Costs of fuel, oil and lubricant, electricity and water consumptions have been taken in to consideration, the rates of which have been estimated on the basis of the proposed capacity utilization program of the project and at the current official charging rates. At full capacity operation the project will have the following utility expense per annum which amounts to Birr 6 million.

PROJECT PROFILE ON PERFUME PRODUCTION

Table 11 Utilities of the factory'000''Birr

Utility''000''Birr		Start-up			Full Capacity
		70 %	80 %	90 %	100 %
Capacity utilization		70 %	80 %	90 %	100 %
Project year		1	2	3	4
Item description	Unit of measurement				
Fuel					
Gasoline for transport truck	(200km*300days* 47Birr/LIT*5km/Li)*2	1,128	1,128	1,128	1,128
Sub-Total					
Change of oil and lubricant	10% of the fuel consumption	113	113	113	113
Sub-Total		1,241	1,241	1,241	1,241
Electricity	260days*24 hrs*650kwh* 1.00Birr/kwh	2,839	3,245	3,650	4,056
Sub- Total		2,839	3,245	3,650	4,056
Water	365days*100m ³ /day*15 Birr/m ³	384	438	493	548
Sub -Total		384	438	493	548
Telecommunication					
Telephone	5 lines* 1,500Birr/month/line+18Birr/line/month	31.08	31.08	31.08	31.08
Mobile	5 lines*1,500 Birr/month/line	30.00	30.00	30.00	30.00
Fax	2line*1,000Birr/month + 17 Birr/line/month	12.40	12.40	12.40	12.40
Internet	2,500 Birr/month	30.00	30.00	30.00	30.00
Sub-Total		103.48	103.48	103.48	103.48
TOTAL		4,568	5,028	5,488	5,949

PROJECT PROFILE ON PERFUME PRODUCTION

5.5.3 Over heads

In the expenses under this title have been included land and building taxes, buildings, vehicles as well as machinery and equipment insurance, vehicles annual inspection; postage, telephone and e. mail, stationery and office supplies; printing and copying; audit fee; cash indemnity etc. The overhead costs and divided in to direct overheads and administration overheads.

Table 12 Overhead costs

Direct Overhead”000”Birr		Year 1	Year 2	Year 3	Year 4
Annual land lease Payment		5,550	5,550	5,550	5,550
Insurance					
Building and Civil works	0.10%	125	125	125	125
Machinery and Equipment	0.20%	82	82	82	82
Motor vehicle and Truck	1%	60	60	60	60
Vehicles annual inspection and registration	25,000 Birr per annum per vehicle	25	25	25	25
Work cloth	Two times per annum per workers at 1,000 Birr	76	76	76	76
Cleaning and sanitation	An estimate of 300 Birr/day	78.00	78.00	78.00	78.00
Sub Total		5,996.00	5,996.00	5,996.00	5,996.00
Administration Overhead “000’ Birr					
Audit fee	40,000 Birr per annum	40.00	40.00	40.00	40.00
Office cleaning and sanitation	2,000 Birr per month	24.00	24.00	24.00	24.00
Stationery and office supplies	2,000 Birr per month	20.00	20.00	20.00	20.00
Printing and Copy	2,000 Birr per month	24.00	24.00	24.00	24.00
Sub Total		108.00	108.00	108.00	108.00
GRAND TOTAL		6,104	6,104	6,104	6,104

PROJECT PROFILE ON PERFUME PRODUCTION

5.5.4 Financial costs

As it has been outlined earlier under” project Financing” the current Development Bank of Ethiopia credit terms and conditions for newly establishing projects have been used to compute the financial costs, estimated to be incurred in connection with that of the total investment costs assumed to be covered through loan financing. The amount of the loan capital to be obtained and the financial costs to be incurred thereof have been determined depending on the amount of fixed investment cost and pre-production expenses.

5.5.5 Depreciation

Table 13 Depreciation in Birr"000"

Period			Start-up			
			70 %	80 %	90 %	100 %
Capacity utilization			70 %	80 %	90 %	100 %
Project year			1	2	3	4
Item description	Original Value					
Structure and civil works	124,925,000.00	5% of original value	6,246	6,246	6,246	6,246
Machinery and equipment	41,000,768.00	15 % of original value	6,150	6,150	6,150	6,150
Transformer	2,000,000.00	15 % of original value	300	300	300	300
Motor vehicles and trucks	6,000,000.00	15% of original value	900	900	900	900
Weighbridge	4,000,000.00	15 % of original value	600	600	600	600
Office equipment and furniture	500,000.00	20 % of original value	100	100	100	100
Pre-production expenses	2,000,000.00	25% of original value	500	500	500	500
Total			14,796	14,796	14,796	14,796

5.6 Break Even point and ROI

5.6.1 Break Even point (BEP)

Three kinds of break-even point

- A. BEP Sales Revenue(BR)
- B. BEP production (Volume)
- C. BEP Percentage (%)

A. Break-even point(BEP) Sales

To determine BEP Annual Sales, multiply annual sales found in income statement by the annual fixed cost, and divided by Annual sales less Annual variable cost.

$$\text{BEP (sales)} = \frac{\text{Annual sales} \times \text{Annual fixed costs}}{\text{Annual sales} - \text{Annual variables costs}}$$

Annual sales = 280,000,000Birr

Unit selling price = 2,000Birr/PCS

$$\text{BEP (sales)} = \frac{\text{Annual sales} \times \text{Annual fixed costs}}{\text{Annual sales} - \text{Annual variables costs}} = \frac{280,000,000 \times 45,971,000}{280,000,000 - 78,887,000}$$

BEP (Sales) = 163,168,583 Birr

$$\begin{aligned} \text{B. BEP percentage} &= \frac{\text{Annual fixed costs} \times 100\%}{\text{Annual sales} - \text{Annual variables costs}} \\ &= \frac{45,971,000 \times 100\%}{280,000,000 - 78,887,000} \\ &= 58\% \end{aligned}$$

5.6.2 Return on investment

Return on investment = Net profit /Total capital requirement

$$= 47,253,000/253,403,760$$

$$= 19\%$$

PROJECT PROFILE ON PERFUME PRODUCTION

The return on owners' investment (ROOI)

= Annual net profit /owners' investment

= 47,253,000/76,021,128

= 62%

5.7 Project benefits

For financial analysis and evaluation of the given project, the current raw materials price, and packing materials buying price and final packed processed perfume price at the project gate has been taken as a basis. Consequently, based on the recent market survey, price has been indicated in table 16.

As it has been stated earlier the project is envisaged to reach full capacity operation four years after commencement of production activities which are assumed to begin with 70% of the estimated total capacity.

Thus, according to the computation in Annex Table 17 and Annex Table 19, the net income and cash flow statements analysis revealed that at full capacity operation the project will generate a total income (gross revenue) amounting to 400 million Birr per annum. The Net Income Statement shows a steady growth of gross profit starting from 33 million Birr in year 1 reaching the peak of 94 million Birr in year 10. In its 10 years of manufacturing activities, the project is expected to generate a total net profit of 467 million Birr and contribute 252 million Birr to the government treasury in form of 35% income tax.

According to the current investment Law, machinery and equipment are anticipated to be imported duty- free. The liquidity position of the project is very strong. The corresponding Annex Table 19

PROJECT PROFILE ON PERFUME PRODUCTION

of “Cash Flow Statement” shows the positive cumulative cash balance of Birr 408 million and the project will not face any cash shortage throughout its production life.

The computation of the pay-back period as depicted in Annex table 24 indicates that the project will be able to reimburse itself from its net cash-income within six years after commencement of production activities, the period which is considered to be very good for the project of this nature.

In Annex Table 25 of the Benefit-cost ratio and Net present value (NPV) have been calculated at 17% discount factor (D.F) for 10 years of the project activity. Accordingly, the project has NPV of 9204 million Birr at 17%D.F. and the benefit-cost ratio of 1.13 at 17% D.F. these results are most appreciable, especially, when related to the external capital borrowing interest rate which ranges from 8.50% to 18.5 % for newly establishing projects.

Break-even point (BEP) have been undertaken the project under study when implemented will have BEP at about 58% operation of the estimated full capacity

In addition to this, finally, summary of financial efficiency tests have been conducted in Annex table 23, Accordingly, all efficiency ratios indicated positive trends and consequently, it can be inferred that the project can operate in the frame work of free market mechanism on commercially and financially viable basis and is remunerative.

ANNEXES

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX II

CALCULATION OF ANNUAL PRODUCTION COSTS

Table 14 Annual total production costs''000''

Period	Start-up			Full capacity						
	70 %	80 %	90 %	100 %	100 %					
Project Year	1	2	3	4	5	6	7	8	9	10
Cost category										
I. Material inputs including packing materials	184,886	211,298	237,711	264,123	264,123	264,123	264,123	264,123	264,123	264,123
II. Labor	4,672	4,672	4,672	4,672	4,672	4,672	4,672	4,672	4,672	4,672
III. Utility	4,568	5,028	5,488	5,949	5,949	5,949	5,949	5,949	5,949	5,949
IV. Repair and Maintenance and spare parts (1.5 % of fixed costs)	3,259	3,259	3,259	3,259	3,259	3,259	3,259	3,259	3,259	3,259
VI Direct overheads	5,996	5,996	5,996	5,996	5,996	5,996	5,996	5,996	5,996	5,996
A. Direct Production costs	203,381	230,253	257,126	283,999	283,999	283,999	283,999	283,999	283,999	283,999
VII. Administration over head	108	108	108	108	108	108	108	108	108	108
VIII. Marketing and Promotional expense 3 % of sales revenue	8,400	9,600	10,800	12,000	12,000	12,000	12,000	12,000	12,000	12,000
B. Operating costs	211,889	239,961	268,034	296,107	296,107	296,107	296,107	296,107	296,107	296,107
Interest	20,399	19,208	17,880	16,400	14,749	12,909	10,857	8,568	6,017	3,172
Depreciation	14,796	14,796	14,796	14,796	14,296	14,196	11,549	6,246	6,246	6,246
C. Total production costs	247,084	273,965	300,710	327,303	325,152	323,212	318,513	310,921	308,370	305,525

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX IV CALCULATION OF WORKING CAPITAL REQUIREMENTS

- I. Minimum requirement of current assets and liabilities
- A. Accounts receivable: 26 days at total production costs minus depreciation and interest
- B. Inventory
1. Material inputs: 26 days
 2. Spare parts : 90 days
 3. Work under process: two days at direct costs
 4. Product ready for delivery: 8 days at direct costs plus administration overheads
- C. Cash on hand : 360 days
- D. Accounts payable 26 days for material inputs and utilities

ii. Working capital requirement

Table 15 Calculation of working capital

Cost category	Minimum Days of coverage	Coeff-icent of turnover	Project year									
			Start up			Full capacity						
			1	2	3	4	5	6	7	8	9	10
I. Current asset												
A. A/R	26	10	21,189	23,996	26,803	29,611	29,611	29,611	29,611	29,611	29,611	29,611
B. Inventory												
1. Material inputs	26	10	18,489	21,130	23,771	26,412	26,412	26,412	26,412	26,412	26,412	26,412
2. Spare parts	90	4	815	815	815	815	815	815	815	815	815	815
3. Work under process	2	130	1,564	1,771	1,978	2,185	2,185	2,185	2,185	2,185	2,185	2,185
4. Product ready for delivery	8	32.5	6,366	7,193	8,020	8,846	8,846	8,846	8,846	8,846	8,846	8,846
C. Cash on hand	90	4	4,651	4,766	4,881	4,996	4,996	4,996	4,996	4,996	4,996	4,996
D. Current assets			53,073	59,670	66,267	72,865	72,865	72,865	72,865	72,865	72,865	72,865
II. Current liabilities												
A. A/p	26	10	18,945	21,633	24,320	27,007	27,007	27,007	27,007	27,007	27,007	27,007
III. Working capital												
A. Net working capital			34,128	38,038	41,948	45,858	45,858	45,858	45,858	45,858	45,858	45,858
B. Increasing in working capital			34,128	3,910	3,910	3,910	0	0	0	0	0	0

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX V

PROJECTED SALES REVENUE

Table 16 projected sales revenue '000'

Period					Start up			Full capacity						
					70 %	80 %	90 %	100 %						
Capacity utilization		U/m	Quantity at full capacity	Unit price										
Item description	Product mix													
Project year					1	2	3	4	5	6	7	8	9	10
	Packed perfume in 200 gm	Pcs	200,000	2,000	280,000	320,000	360,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
GRAND TOTAL					280,000	320,000	360,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX VI

PROJECTED NET INCOME STATEMENT

Table 17 Projected Net income statement "000"

Period	Start up			Full capacity						
	70 %	80 %	90 %	100 %						
Project year	1	2	3	4	5	6	7	8	9	10
Item description										
Product sales revenue	280,000	320,000	360,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Less total production costs	247,084	273,965	300,710	327,303	325,152	323,212	318,513	310,921	308,370	305,525
Gross profit	32,916	46,035	59,290	72,697	74,848	76,788	81,487	89,079	91,630	94,475
Tax	11,521	16,112	20,752	25,444	26,197	26,876	28,520	31,178	32,071	33,066
Net profit	21,395	29,923	38,539	47,253	48,651	49,912	52,967	57,901	59,560	61,409
Accumulated undistributed profit	21,395	51,318	89,857	137,110	185,761	235,673	288,640	346,541	406,101	467,509

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX VII DEBT SERVICE SCHEDULE AND COMPUTATION PAYMENT OF EQUAL ANNUAL INSTALLMENTS

Table 18 Debt services schedule and computation

Item description	Project year									
	1	2	3	4	5	6	7	8	9	10
A. Investment and working capital										
1. Investment										
2. Increment working capital										
Total										
B. Loan receipts and balances										
1. Loan receipts										
2. Outstanding balance at end of year	177,382									
a. First year loan	177,382	167,027	155,481	142,608	128,254	112,249	94,403	74,505	52,320	27,582
Total										
A. Debt service										
1. First year Loan										
a. Interest	20,399	19,208	17,880	16,400	14,749	12,909	10,857	8,568	6,017	3,172
b. Repayment of principal	10,355	11,546	12,874	14,354	16,005	17,846	19,898	22,186	24,737	27,582

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX VIII CASH-FLOW STATEMENT FOR FINANCIAL PLANING

Table 19 Projected Cash flow statement

Period	Start up				Full capacity						
	70%	80%	90%	100%							
Capacity utilization											
Project year	1	2	3	4	5	6	7	8	9	10	
Item description											
A. Cash - inflow	552,349	326,598	366,597	406,597	400,000	400,000	400,000	400,000	400,000	400,000	
1. Financial resource (total)	272,349	6,598	6,597	6,597							
2. Sales revenue	280,000	320,000	360,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	
B. Cash – outflow	526,513	293,425	326,137	358,902	353,058	353,738	355,382	358,039	358,932	359,927	
1. Total assets schedule including replacement	272,349	6,598	6,597	6,597							
2. Operating costs	211,889	239,961	268,034	296,107	296,107	296,107	296,107	296,107	296,107	296,107	
3. Debt service (total)											
a. Interest	20,399	19,208	17,880	16,400	14,749	12,909	10,857	8,568	6,017	3,172	
b. Repayment	10,355	11,546	12,874	14,354	16,005	17,846	19,898	22,186	24,737	27,582	
4. Tax	11,521	16,112	20,752	25,444	26,197	26,876	28,520	31,178	32,071	33,066	
C. Surplus (Deficit)	25,836	33,173	40,460	47,695	46,942	46,262	44,618	41,961	41,068	40,073	
D. Cumulative cash balance	25,836	59,009	99,469	147,164	194,106	240,368	284,986	326,947	368,015	408,088	

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX XII TOTAL INVESTMENT COSTS

Table 20 Total investment costs”000”

Period	Start up			Full capacity								
	1	2	3	4	5	6	7	8	9	10	11	
Project year												
Investment Category												
1. Fixed investment costs												
a. Initial fixed investment costs	217,276											
b. Replacement												
2. Pre-operational capital expenditure	2,000											
3. Working capital increase	34,128	3,910	3,910	3,910								
Total investment costs	253,404	3,910	3,910	3,910								

ANNEX XIII TOTAL ASSETS

Table 21 Total Assets

Period	Start up			Full capacity								
	1	2	3	4	5	6	7	8	9	10	11	12
Project year												
Investment Category												
1. Fixed investment costs												
c. Initial fixed investment costs	217,276											
❖ Cost of land												
d. Replacement												
2. Pre-operational capital expenditure	2,000											
3. Current assets increase	53,073	6,597	6,597	6,598								
Total assets	272,349	6,597	6,597	6,598								

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX XIV SOURCES OF FINANCE

Table 22 Sources of finance

Period	Start up			Full capacity							
	1	2	3	4	5	6	7	8	9	10	Total
Project year											
Sources of finance											
1. Equity capital	76,021	3,910	3,910	3,910							
2. Loan capital	177,383										
3. Current liabilities	18,945	2,688	2,687	2,687							
Total finance	272,349	6,598	6,597	6,597							

ANNEX XI SUMMARY OF FINANCIAL EFFECIENCY TESTS

Table 23 Summary of financial efficiency tests

Project year	Project year									
	1	2	3	4	5	6	7	8	9	10
Capacity utilization	70%	80%	90%	100%						
Financial ratio in %										
1. Gross profit : Revenue	12%	14%	16%	18%	19%	19%	20%	22%	23%	24%
2. Net profit : Revenue	8%	9%	11%	12%	12%	12%	13%	14%	15%	15%
3. Net profit : initial investment	8%	12%	15%	18%	18%	19%	20%	22%	22%	23%
4. Net profit : Equity	28%	37%	46%	54%	55%	57%	60%	66%	68%	70%
5. Gross profit : Initial investment	13%	18%	23%	27%	28%	29%	31%	34%	35%	36%
6. Operating costs : Revenue	76%	75%	74%	74%	74%	74%	74%	74%	74%	74%

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX XV CALCULATIONS OF PAYBACK PERIOD

Table 24 Calculation of payback period”000”

Year	Amount Paid Back			Total investment	End of year
	Net Profit	Depreciation	Total		
1	21,395	14,796	36,191	253,404	-217,213
2	29,923	14,796	44,719	3,910	-176,404
3	38,539	14,796	53,335	3,910	-126,979
4	47,253	14,796	62,049	3,910	-68,840
5	48,651	14,296	62,947	0	-5,893
6	49,912	14,196	64,108		+58,215

PROJECT PROFILE ON PERFUME PRODUCTION

ANNEX XVI CALCULATIONS OF NET PRESENT VALUE AT 17% D.F.

Table 25 Calculation of NPV at 17% D.F.

Project year	Gross Revenue	1/(1+i) ⁿ At 17%	Present value at 17%	Project costs			
				Total investment	Operating costs	Total	Present value at 17%
1	280,000	0.854701	239,316	253,404	211,889	465,293	397,686
2	320,000	0.730514	233,764	3,910	239,961	243,871	178,151
3	360,000	0.624371	224,774	3,910	268,034	271,944	169,794
4	400,000	0.53365	213,460	3,910	296,107	300,017	160,104
5	400,000	0.456111	182,444		296,107	296,107	135,058
6	400,000	0.389839	155,936		296,107	296,107	115,434
7	400,000	0.333195	133,278		296,107	296,107	98,661
8	400,000	0.284782	113,913		296,107	296,107	84,326
9	400,000	0.243404	97,362		296,107	296,107	72,074
10	400,000	0.208037	83,215		296,107	296,107	61,601
Total			1,677,462				1,472,889

A. Benefit- cost ratio At 17% D.F. = 1.13

B. NPV At 17% D.F. = 204,573,000 Birr