174. PROFILE ON GENERAL HOSPITAL

TABLE OF CONTENTS

I. SUMMARY

This profile envisages the establishment of a general hospital with a capacity of 50 beds . General hospital is a medical facility that provides health care to both in-patients and out-patients and treats many types of diseases with professionals. In Ethiopia a general hospital is supposed to serve 50,000 people and provide all types of clinical service including surgery.

The market study shows that in Addis Ababa currently an additional 2 general hospitals are required. If additional general hospitals are not established the requirement will increase to 16 general hospitals by the year 2020.

The total investment requirement is estimated at about Birr 15.54 million, out of which Birr 3.7 million is required for medical equipment. The service will create employment opportunities for 79 persons.

The project is financially viable with an internal rate of return (IRR) of 20.90 % and a net present value (NPV) of Birr 9.11 million, discounted at 8.5 %.

II. SERVICE DESCRIPTION AND APPLICATION

General hospital is a medical facility that provides health care to both in patients and out patients and treats many types of diseases with medical professionals. In Ethiopia a general hospital is supposed to serve 50,000 people and provide all types of clinical service including surgery.

Improved health service coverage and quality will have a positive effect in improving the quality of life of the community.

III. MARKET STUDY AND SERVICE CAPACITY

A. MARKET STUDY

1. Present and Projected Demand

Health service provision is one the most priority service areas for the population. At present, health service providers in Addis Ababa are Federal Government Agencies, Addis Ababa Health Bureau, Non Governmental Organizations (NGOs), factories, and the private entrepreneurs. The number of registered and licensed health facilities by the City Administration in 2004/05 is 603. The distribution of health facilities by their type is shown in Table 3.1.

Table 3.1

NUMBER OF HEALTH FACILITIES IN ADDIS ABABA CITY BY TYPES OF OWNERSHIP (2004/2005)

Ownership Type	Number of Health Facilities				
	Hospital	Health Center	Clinic	Health Post	Total
Addis Ababa Health Bureau	5	23	9	34	71
Ministry of Health	4	0	0	0	4
Addis Ababa University	1	0	0	0	1
Ministry of Defense	2	0	0	0	2
Police Force	1	0	0	0	1
Total Government	13	23	9	34	79
% Share Government	46.43	88.46	1.76	80.95	13.10
NGO	2	2	29	8	41
% Share NGO	7.14	7.69	5.72	19.05	6.80
Factories	0	0	102	0	102
% Share Factory	0	0	20.02	0	16.92
Private sector	13	1	376	0	390
% Share Private	46.43	3.85	74.16	0	64.68
Total	**28**	**26**	**507**	**42**	**603**

***Source**: Some Health Service Information, Addis Ababa Bureau of Health, 2004/05 (Unpublished).*

As can be seen from Table 3.1 the distribution of health facilities is:

- 28 hospitals,
- 26 health centers,
- 507 clinics, and
- 42 health posts.

The health service coverage and quality is improving in the city from time to time. However, health service supply is still below the standards established by the Ministry of Health. According to the standard set by the Ministry of Health; one district hospital is for 250,000 people, one regional hospital for 1,000,000 people and one specialized hospital for 5,000,000 million people.

Hospitals in Addis Ababa are not limited to providing services for the people residing in the city only. As the city is the center of the country in many socio-economic aspects of peoples' life and due to the expectations that better health services are available in Addis Ababa than in other regional centers, health facilities in Addis Ababa provide service to significant number of population in the surrounding areas out side the city and other regional states. As a result, practically high shortage of hospital services is observed.

One can not understand the actual health service status in Addis Ababa, by comparing the city's health facilities with the size of population in the city. This hides the practically existing situation. Health facilities in the city provide service to the population in the city and also roughly to an equal number of people from the surrounding areas and all regional states. Therefore, it will be more realistic to evaluate the health service coverage and quality of services provided in Addis Ababa from this perspective.

Considering the population of Addis Ababa and the expected number of potential service seekers from the surroundings and regional states for the year 2005, and using the standards set by the ministry of health, 2 more hospitals were needed in 2005 in addition to the existing 28 hospitals.

2. Projected Demand

In projecting the demand for hospitals, the projected population figures for Addis Ababa by CSA, the above mentioned potential service demanding population from the surroundings of Addis Ababa and regional states, the standards set by the Ministry of Health regarding health service facilities were considered. Accordingly, assuming that the present existing hospitals will continue operating, the projection for additional required hospitals is shown in Table 3.2.

Table 3.2

PROJECTED DEMAND FOR TOTAL ADDITIONAL HOSPITALS

Year	Total Additional Hospitals (No.)
2006	3
2007	4
2008	5
2009	6
2010	7
2011	8
2012	9
2013	9
2014	10
2015	11
2016	12
2017	13
2018	14
2019	15
2020	16

3. Pricing

For the purpose of this study a price of Birr 60 and Birr 120 per check up for out-patients and per night for in-patients respectively is adopted. More over, for x-ray check up and laboratory analysis of blood and stool, the envisaged hospital will charge Birr 40 and Birr 30 respectively.

B. HOSPITAL CAPACITY AND OPERATIONAL PRPGRAMME

1. Hospital Service Capacity

Based on the market study shown above, the projected demand for additional hospitals for the year 2008 is 5, and this figure will grow to 11 by the year 2015, and then to 16 by the year 2020. Examining the demand projection in Table 3.2, it is observed that there is a need of one additional hospital every year starting from year 2006 until 2019. The study will consider an establishment of one general hospital comprised of the following departments:

a) Emergency Room,
b) Surgical Suites,
c) Intensive Care Units (ICUS),
d) Pediatric and Maternity Awards, and
e) Departments of Radiology, Anesthesiology, Pathology, And Rehabilitation Medicines.

This hospital will employ medical, nursing and support staff to provide in-patient care to people who require close medical monitoring and out-patient care to people who need treatment but not constant medical attention.

The envisaged general hospital will have 50 beds for patients. The in patients are assumed to wait for a maximum of 10 days on average, making 1,825 patients per annum.

Since the general hospital is assumed to serve 50,000 patients per annum, the remaining 48,125 persons are outpatients. Of the total 50,000 patients that will be treated in the hospital in a year, it is assumed that about 65% will take x-ray and laboratory check-ups (i.e., 32,500 patients). The general hospital in question will provide diagnosising health problems, surgery, rehabilitation, health education programs, and nursing.

2. Operational Programme of the Hospital

The hospital can start providing service at 75% of its full capacity in the first year, and slowly build-up its service to 85% and then to 100%, during the second and third year, respectively. Table 3.3 shows operational build-up programme.

Table 3.3

OPERATIONAL BUILDING-UP PROGRAMME

Year	**1**	**2**	**3 and above**
Capacity utilization (%)	75	85	100
Service operation (patients)	37,500	42,500	50,000

IV. MEDICAL SUPPLIES AND UTILITIES

A. MEDICAL SUPPLIES

The medical supplies required by the general hospital and corresponding costs are indicated in Table 4.1 below.

Table 4.1

MEDICAL SUPPLIES REQUIREMENT AND ESTIMATED COST (IN PAKAGE)

Sr. No.	Description	Qty.	Cost ' Birr		
			FC	LC	TC
1	Adrenaline injection	40	26,000	14,000	40,000
2	Minophyllioc injection	20	16,250	8,750	25,000
3	Savlon (chlorhexidene + Cotrimide)	25	17,875	9,625	27,500
4	Alcohol solution 79%	15	7.313	3,938	11,250
5	Dextrese 40% injection	10	3250	1,750	5,000
6	Ergometrine maleate injection tabs	20	17550	9,450	27,000
7	Hydrocortisone sodium succinate	5	6,500	3,500	10,000
8	Lidocaine hydrochloride injection	5	5,688	3,063	8,750
9	Procaine hydrochloride injection	10	8,776	4,726	13,502
10	Vitamin k injection	10	13,000	7,000	20,000
11	Hyoscine hydropromide injection	10	7,475	4,025	11,500
12	Bandage different sizes	40	29,120	15,680	44,800
13	Cotton	40	-	26,000	26,000
14	Disposable syringes different types	20	17,550	9,450	27,000
15	Disposable needle different types	20	12,350	6,650	19,000
	Grand Total		**188,697**	**127,607**	**316,304**

B. UTILITIES

The major utilities required by the general hospital are electricity and water. The required quantity of these utilities and corresponding cost are indicated Table 4.2.

Table 4.2

ANNUAL UTILITIES REQUIREMENT AND COST

Sr. No.	Utility	Unit of Measure	Qty.	Cost ('000 Birr)
1	Electricity	kWh	200,000	94.72
2	Water	m^3	10,000	32.5
	Total			**127.22**

V. TECHNOLOGY & ENGINEERING

1. Medical Equipment

The list of medical equipment required by the envisaged general hospital is shown in Table 5.1. The total cost of medical equipment is estimated at Birr 3.7 million, out of which Birr 3.145 million is required in foreign currency. It is assumed that all equipment will be purchased from foreign markets.

Table 5.1
REQUIRED MEDICAL EQUIPMENT AND COST

Sr. No.	Description	Unit of Measure	Qty.	Cost (Birr)		
				LC	FC	TC
1	Sphygmomanometer	pcs	2	15,000	85,000	100,000
2	Clinical thermometers (assorted)	set	1	1,500	8,500	10,000
3	Diagnostic set	set	4	15,000	85,000	100,000
4	Scale infant	pcs	4	1,500	8,500	10,000
5	Scale adult	pcs	4	1,800	10,200	12,000
6	Examination bed	pcs	6	1,800	10,200	12,000
7	Hospital bed	pcs	50	22,500	127,500	150,000
8	Infusion stand	pcs	5	2,250	12,750	15,000
9	Instruments sterilizer	pcs	2	7,500	42,500	50,000
10	Refrigerator	pcs	2	4,500	25,500	30,000
11	Stethoscope	pcs	2	4,500	25,500	30,000
12	Centrifuge	pcs	4	3,000	17,000	20,000
13	Lab. Bench	pcs	2	900	51,00	6,000
14	Glass ware (assorted)	set	4	2,100	11,900	14,000
15	Timer	pcs	2	300	1,700	2,000
16	Photometer	pcs	2	3,000	17,000	20,000
17	Hemoglobin pipette	set	2	900	5,100	6,000
18	WBC pipette	set	2	900	5,100	6,000
19	Hemocytometer with its cover slide	pcs	1	4,500	25,500	30,000
20	Test tubes (assorted)	set	2	900	5,100	6,000
21	Measuring pipettes (assorted)	set	2	300	1,700	2,000
22	Electrical boiler	pcs	1	75,000	425,000	500,000
23	Delivery table	pcs	4	900	5,100	6,000
24	Foetal monitor	pcs	1	45,000	255,000	300,000
25	Vacuum extractor/retoscope	pcs	1	2,250	12,750	15,000

Table 5.1 Cont'd

Sr. No.	Description	Unit of Measure	Qty.	Cost(Birr)		
				LC	FC	TC
26	Aspirator/manual	pcs	2	300	1,700	2,000
27	Breast pump	pcs	2	2,100	11,900	14,000
28	Suction unit	pcs	1	750	4,250	5,000
29	Light portable/mobile	pcs	2	150	850	1,000
30	Auxiliary operating light	pcs	2	1,500	8,500	10,000
31	minor operating set	set	3	27,000	153,000	180,000
32	Autoclave	pcs	2	15,000	85,000	100,000
33	Delivery kit	set	2	450	2,550	3,000
34	Stethoscope (baby)	pcs	2	3,000	17,000	20,000
35	Oto-opthalmoscope	pcs	2	9,000	51,000	60,000
36	Hand reflector	pcs	2	450	2,550	3,000
37	Respiration bag adult	pcs	4	900	5,100	6,000
38	Respiration bag babies	pcs	4	1,080	6,120	7,200
39	Oxygen cylinder 20 lts	pcs	2	3,000	17,000	20,000
40	Tourniquet	pcs	2	270	1,530	1,800
41	Forceps assorted	pcs	2	900	5,100	6,000
42	Enema set	set	2	4,500	25,500	30,000
43	Pediatric surgical kit	set	2	10,500	59,500	70,000
44	Sphygmomanometer (pediatric, various)	pcs	1	4,650	26,350	31,000
45	X-ray machine	pcs	1	180,000	1,020,000	1,200,000
46	Fluoroscopy	pcs	2	60,000	340,000	400,000
47	Viewers	set	1	3,750	21,250	25,000
48	Cassettes intensifying screens, film	set	1	7,500	42,500	50,000
49	Hanger (different types)	set	1	450	2,550	3,000
	Grand Total			**555,000**	**3,145,000**	**3,700,000**

2. Source of Medical Equipment

The medical equipment required by the envisaged higher clinic can be acquired from the following supplier.

Raja medical equipment supplier
West Bombay 123456, INDIA
Raj Bavan street
Fax. 213-346789

B. ENGINEERING

1. Land, Building and Civil Works

The total area requirement of the project is estimated at 3,000 m^2, out of which the built-up area is estimated to be 1,200 m^2. The total cost of building and cost civil works, at an average cost of Birr 2,300 per m^2 is estimated to be Birr 2,760,000.

The details of the various buildings are given below:

1. Emergency room	200 sq. meters
2. Surgical room	150 sq. meters
3. Intensive Care	150 sq. meters
4. Pediatric and Maternity Awards	200 sq. meters
5. Departments (x 4)	200 sq. meters
6. Administration Building	200 sq. meters
7. General purpose	100 sq. meters

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 governments depending on the level of development.

In Addis Ababa the city's Land Administration And Development Authority is directly responsible in dealing with matters concerning land. Accordingly, the initial land lease rate in Addis Ababa set by the Authority based on the location of land is as shown in Table 5.2.

Table 5.2

INITIAL LAND LEASE RATE IN ADDIS ABABA

Sr. No	Location of the land	Land Grade	Initial Price in m^2
1	Central Business zones	1	1167.3
		2	1062.9
		3	916.2
		4	751.5
		5	619.2
2	Places that are Under Transit	1	716.4
		2	647.1
		3	559.8
		4	472.5
		5	384.3
3	Expansion Zones	1	245.7
		2	207
		3	150.3
		4	132.3

Source: *Addis Ababa City Land Administration Authority.*

As can be seen from Table 5.2, the initial land lease rate ranges from Birr 1,167.3 to 132.3 per m^2 .

Currently, most of the health facilities in Addis Ababa are located on the central business zones of the city. Therefore, places under transit and expansion zones are recommended as the best locations for the project. Accordingly, the average of the highest land lease rates in places under transit and expansion zones which is Birr 481.05 m^2 is adopted.

The Federal Legislation on the Lease Holding of Urban Land legislation has also set the maximum on lease period and the payment of lease prices (see Table 5.3 and Table 5.4).

Table 5.3

LEASE PERIOD

Type of Service	Lease Period (Years)
Residential area	99
Industry	80
Education, cultural research health, sport, NGO and religious	99
Trade	70
Urban Agriculture	15
Other service	70

Table 5.4

LEASE PAYMENT PERIOD

Sr. No.	Service Type	Period of Payment According to the Grade of Towns
1	Private residential are obtained through tender or negotiation	50 - 60 years
2	Trade	40 - 50 years
3	Industry	40 - 50 years
4	Real estate	40 years
5	Urban Agriculture	8 - 10 years
6	Trade and social service	40 - 50 years
7	Others	40 years

Moreover, advance payment of lease based on the type of investment ranges from 5% to 10%. 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. The lease price is payable after the grace period annually.

Regarding, the terms and conditions of land lease the Addis Ababa City Government have adopted Article 6 of the Federal Legislation with very minimal changes. Therefore, for the purpose of this project profile since the project is engaged in social service , 99 years lease period, 50 years lease payment completion period, 5% down payment and seven years grace period is used.

Accordingly, the land lease cost of the project, at rate of Birr 481.05 per m^2 for 99 years of holding is estimated at Birr 142.87 million. Assuming 5% of the total cost (Birr 7.14) will be paid in advance as down payment and the remaining Birr 135.73 million will be paid in equal installments with in 50 years, the annual lease payment is estimated at Birr 2,714,565**.**

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

The envisaged general hospital project requires 79 work forces. The proposed manpower requirement for the envisaged hospital and the estimated annual labor cost including fringe benefits are given in Table 6.1.

B. TRAINING REQUIREMENT

Since trained personnel in the field is to be recruited orientation during erection and commissioning period is sufficient for operators of certain machines like x-ray, boiler, autoclave, centrifuge etc. the cost of this training is estimated at Birr 50,000.

Table 6.1

MANPOWER REQUIREMENT AND LABOUR COST

Sr. No.	Description	Req. No.	Monthly Salary (Birr)	Annual Salary (Birr)
1	Medical director	1	5,000	60,000
2	Administrator	1	2,500	30,000
3	Doctor (medical)	6	24,000	288,000
4	Matron (head nurse)	2	4,000	48,000
5	Nurse	8	12,000	18,000
6	Health assistant	6	4800	57,600
7	Health officer	2	3,000	36,000
8	Mid wife	4	12,000	144,000
9	Radiographer (x-ray technician)	2	2,000	24,000
10	Assistant x-ray technician	2	1000	12,000
11	Lab technician	4	4,800	57,600
12	Card room staff	4	1800	21,600
13	Assistant lab. Technician	3	1800	21,600
14	Secretary (receptionist)	2	1200	14,400
15	Cleaners	18	6300	75,600
16	Driver	2	900	10,800
17	Guards	12	4200	50,400
	Sub-Total	**79**		**1,095,600**
	Employees benefits 25% of basis salary			273900
	Total	**79**		**1,369,500**

VII. FINANCIAL ANALYSIS

The financial analysis of the general hospital 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
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 day
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 15.54 million, of which 20% is 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	Local Cost	Foreign Cost	Total Cost
1	Land lease value	7,140.00	-	7,140.00
2	Building and Civil Work	2,760.00	-	2,760.00
3	Plant Machinery and Equipment	555.0	3,145.00	3,700.00
4	Office Furniture and Equipment	150.00	-	150.00
5	Vehicle	650.00	-	650.00
6	Pre-production Expenditure*	1,077.30	-	1,077.30
7	Working Capital	70.86	-	70.86
	Total Investment cost	**12,403.16**	**3,145.00**	**15,548.16**

* *N.B Pre-production expenditure includes interest during construction (Birr 927.30 thousand , training (Birr 50 thousand) and Birr 100 thousand costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

B. OPERATING COST

The annual operating cost at full capacity operation is estimated at Birr 2.75 million (see Table 7.2). The major components of the operation cost are financial cost, depreciation and direct labour which account for 26.90%, 24.83% and 12.71% respectively. The remaining 33.56 % is the share of medical supplies, labour overhead, utility, repair and maintenance and administration cost .

Table 7.2

ANNUAL PRODUCTION COST AT FULL CAPACITY ('000 BIRR)

Items	Cost	%
Medical supplies	316.30	11.50
Utilities	127.22	4.63
Maintenance and repair	185.00	6.73
Labour direct	349.49	12.71
Labour overheads	116.50	4.24
Administration Costs	232.99	8.47
Land lease cost	-	-
Total Operating Costs	**1,327.50**	48.27
Depreciation	683.00	24.83
Cost of Finance	739.79	26.90
Total Production Cost	**2,750.29**	**100**

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 1.83 million to Birr 3.13 million during the life of the project. Moreover, at the end of the project life the accumulated cash flow amounts to Birr 19.93 million.

2. Ratios

In financial analysis financial ratios and efficiency ratios are used as an index or yard stick 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.

$$BE = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 26\ \%$$

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 4 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 20.90% 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 9.11 million which is acceptable.

D. ECONOMIC BENEFITS

The project can create employment for 79 persons. In addition to supply of the domestic needs, the project will generate Birr 3.76 million in terms of tax revenue. The project will provide the basic necessity for residents of Addis Ababa and thereby increase their productivity.