

## **194. PROFILE ON SPECIALIZED HOSPITAL**

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## **I. SUMMARY**

This profile envisages the establishment of a specialized (heart) hospital with a capacity of 50 beds. Heart Patient Hospital provides a broad range of medical services to heart patients or to pregnant, children, elderly and other vulnerable parts of the society. The service includes prescription of oral and intra vein medicines to common heart disorders, and some minor surgery.

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

The total investment requirement is estimated at about Birr 13.20 million, out of which Birr 5.64 million is required for medical equipment. The service will create employment opportunities for 59 persons.

The project is financially viable with an internal rate of return (IRR) of 16.20 % and a net present value (NPV) of Birr 6.43 million, discounted at 8.5%.

## **II. SERVICE DESCRIPTION AND APPLICATION**

Heart Patient Hospital provides a broad range of medical services to heart patients or to pregnant, children, elderly and other vulnerable parts of the society. The service includes prescription of oral and intra vein medicines to common heart disorders, and some minor surgery.

In order to render the above services, the hospital employs medical, nursing and support staff to provide inpatient care to those who require close medical monitoring and out patients care to people who need treatment but not constant medical attention. The

Hospital will have Examination room, Laboratory room, Operating room and Recovery room. It also has facilities like X-ray, Ultrasound and other laboratory equipments.

### 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
<b>Total Government</b>	13	23	9	34	79
<b>% Share Government</b>	46.43	88.46	1.76	80.95	13.10
NGO	2	2	29	8	41
<b>% Share NGO</b>	7.14	7.69	5.72	19.05	6.80
Factories	0	0	102	0	102
<b>% Share Factory</b>	0	0	20.02	0	16.92
Private sector	13	1	376	0	390
<b>% Share Private</b>	46.43	3.85	74.16	0	64.68
<b>Total</b>	<b>28</b>	<b>26</b>	<b>507</b>	<b>42</b>	<b>603</b>

*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 I 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**

**DEMAND PROJECTION FOR TOTAL ADDITIONAL HOSPITALS**

<b>Year</b>	<b>Total Additional Hospitals</b>
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 PRPROGRAMME

### 1. Hospital Service Capacity

Based on the market study shown above the hospital to be established is planned to have twenty beds and has a capacity to treat 200 in patients annually. The number of out patients which can be treated annually by this hospital can reach up to 600.

### 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**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3 and above</b>
Capacity utilization (%)	75	85	100
Service operation(in patients)	150	170	200
Service operation (out patients)	450	520	600

#### IV. MEDICAL SUPPLIES AND UTILITIES

##### A. MEDICAL SUPPLIES

The medical supplies required by the specialized (heart) hospital and corresponding costs are indicated in Table 4.1 below.

**Table 4.1**  
**MEDICAL SUPPLIES REQUIREMENT AND ESTIMATED COSTS**

Sr. No	Description	Unit of measure	Quantity	Cost('000Birr)		Total cost ('000Birr )
				FC	LC	
1	Adrenalin Injection	Pack	15	7.15	38.5	110
2	Aminophyllin Injection	Pack	10	45	24	69
3	Oxytocin Injection	Pack	10	48	25	73
4	Ergometrin Injection	Pack	7.5	48.5	26	74.5
5	Hydro cortisone sodium succinct	Pack	4	36	49.5	85.5
6	Vitamin K injection	Pack	4	36	49.5	55.5
7	Hyoid Hydro bride injection	Pack	7.5	45	24	69
8	Lidocaine Hydrochloride injection	Pack	4	31.5	19.5	51
9	Tetanus anti-toxin Injection (TAT)	Pack	2.5	35	15	50
10	Diclofenac Injection	Pack	2.5	47.5	25	72.5
11	40% Dextrose	Pack	5	9	48	570
12	Intravemous fluids ( different types)	Pack	4	97	52	149
13	Alcohol Solution (79%)	Pack	10	10	-	10

Table 4.1, continued....

Sr. No	Description	Unit of measure	Quantity	Cost('000Birr)		Total cost ('000Birr )
14	Savlon Chlor- hexidine cotrimidde	Pack	15	7.5	-	7.5
15	Plaster	Roll	10	-	5	5
16	Roll bandage different size	Pack	15	-	15	15
17	Elastic bandage	Pack	5	20	-	20
18	Disposable syringe needle (different)	Pack	25	37.5	-	37.5
19	Cotton	Pack	15	-	1.05	1.05
20	Pethidine Injection	Pack	2.5	30	15	45
	<b>Grand Total</b>					<b>1,965,000</b>

## 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	189,696	89,157
2	Water	m <sup>3</sup>	1,560	5,070
	<b>Total</b>			<b>94,227</b>

## V. ENGINEERING

### 1. Medical Equipment

The list of medical equipment required by the envisaged specialized (heart) hospital is shown in Table 5.1. The total cost of medical equipment is estimated at Birr 5.641 million, out of which Birr 4.795 million is required in foreign currency. It is assumed that all equipment will be purchased from foreign markets.

**Table 5.1**

**LIST OF REQUIRED MEDICAL EQUIPMENT AND COSTS**

S.No	Description	Unit of measure	Quantity	Cost(Birr)		
				LC	FC	TC
<b>1. Doctors Office</b>						
1.1	Exam table	number	2	540	3,060	3,600
1.2	Medical Furniture	“	2	900	5,100	6,000
1.3	Medical head lights	“	2	6,750	38,250	45,000
1.4	Microscope	“	2	4,500	25,500	30,000
1.5	Scales and Weights	“	5	1,125	6,375	7,500
1.6	Vital signs monitor	“	2	4,500	25,500	30,000
1.7	EKG	“	2	24,000	136,000	160,000
1.8	Electrocautery	“	2	4,500	25,500	30,000
1.9	Exam lights	“	2	2,250	12,750	15,000
	<b>Sub total</b>			<b>49,050</b>	<b>27,7950</b>	<b>327,000</b>
<b>2. Exam Room</b>						
2.1	Autoclaves	Number	3	13,500	76,500	90,000
2.2	Critical care monitor	“	3	75,000	425,000	500,000
2.3	Diagnostic Equipment	“	2	9,000	51,000	60,000
2.4	Exam Head lights	“	2	4,500	25,500	30,000
2.5	Exam Lights	“	2	2,250	12,750	15,000
2.6	Exam tables	“	2	540	3,060	3,600
2.7	Medical Furniture	“	3	900	5,100	6,000
2.8	Patient Transport	“	3	675	3,825	4,500
	<b>Sub total</b>			<b>106,365</b>	<b>602,735</b>	<b>709,100</b>
<b>3. Lab Equipment</b>						
3.1	Laboratory anesthesia	Number	2	7,500	42,500	50,000
3.2	Autoclaves	“	2	13,500	76,500	90,000
3.3	Respiratory Ventilators	“	2	9,000	51,000	60,000

				<b>Cost(Birr)</b>		
<b>3.4</b>	Diagnostic monitors	“	<b>3</b>	27,000	153,000	180,000
<b>3.5</b>	Lab Tables	“	<b>2</b>	1,800	10,200	12,000
<b>3.6</b>	Medical Lighting	“	<b>2</b>	9,000	51,000	60,000
<b>3.7</b>	Cautery	“	<b>3</b>	6,750	38,250	45,000
<b>3.8</b>	Lab microscope	“	<b>3</b>	6,750	38,250	45,000
<b>3.9</b>	Defibrillators	<b>Numbers</b>	<b>2</b>	11,250	63,750	75,000
<b>3.10</b>	Wormers	“	<b>2</b>	7,500	42,500	50,000
<b>3.11</b>	Centrifuges	“	<b>2</b>	18,000	102,000	120,000
<b>3.12</b>	Patient Circuit	“	<b>2</b>	4,500	25,500	30,000
<b>3.13</b>	Anesthesia Supplies	“	<b>2</b>	3,000	17,000	20,000
<b>3.14</b>	Cautery Supplies	“	<b>2</b>	1,500	8,500	10,000
	<b>Sub total</b>			<b>127,050</b>	<b>719,950</b>	<b>847,000</b>
	<b>4. Operating Room Equipment</b>					
<b>4.1</b>	Anesthesia Equipment	<b>Numbers</b>	<b>2</b>	7,500	42,500	50,000
<b>4.2</b>	Autoclaves	“	<b>2</b>	13,500	76,500	90,000
<b>4.3</b>	Respiratory Ventilators	“	<b>2</b>	9,000	51,000	60,000
<b>4.4</b>	Vaporizers and Accessories	“	<b>2</b>	4,500	25,500	30,000
<b>4.5</b>	Vital signs Monitor	“	<b>2</b>	3,600	20,400	24,000
<b>4.6</b>	Operating room Table	“	<b>2</b>	900	5,100	6,000
<b>4.7</b>	Surgical Lights	“	<b>2</b>	13,500	76,500	90,000
<b>4.8</b>	Head lights and Light sources	“	<b>2</b>	4,800	27,200	32,000
<b>4.9</b>	Patient Transport	“	<b>2</b>	600	3,400	4,000
<b>4.10</b>	Defibrillators	“	<b>2</b>	11,250	63,750	75,000
<b>4.11</b>	Cautery	“	<b>2sets</b>	6,750	38,250	45,000
	<b>Sub total</b>			<b>75,900</b>	<b>430,100</b>	<b>506,000</b>
	<b>5. Recovery Room Equipments</b>					
<b>5.1</b>	Multi Parameter Monitors	<b>Numbers</b>	<b>2</b>	60,000	340,000	400,000
<b>5.2</b>	Hospital beds	“	<b>2</b>	900	5,100	6,000
<b>5.3</b>	Medical Stretches	“	<b>2</b>	3,000	17,000	20,000
<b>5.4</b>	Wheel Chairs	“	<b>2</b>	900	5,100	6,000
<b>5.5</b>	AED	“	<b>2</b>	7,500	42,500	50,000
	<b>Sub total</b>			<b>72,300</b>	<b>409,700</b>	<b>482,000</b>
	<b>6. Cardiac Care</b>					
<b>6.1</b>	Cardiac Monitor	<b>Numbers</b>	<b>2</b>	45,000	255,000	300,000
<b>6.2</b>	Cardiac Ultra sound machine	“	<b>2</b>	90,000	510,000	600,000
<b>6.3</b>	Vascular ultra sound Machine	“	<b>2</b>	37,500	212,500	250,000
<b>6.4</b>	EKG Machine	“	<b>5</b>	60,000	340,000	400,000
<b>6.5</b>	Automated External Defibrillators	“	<b>5</b>	37,500	212,500	250,000
<b>6.6</b>	Intra aortic Balloon Pumps	“	<b>5</b>	11,250	63,750	75,000
<b>6.7</b>	Heart Lung By pass	“	<b>5</b>	15,000	85,000	100,000
<b>6.8</b>	Stress Test System	“	<b>5</b>	18,750	106,250	125,000
<b>6.9</b>	Infusion Pumps	“	<b>5</b>	7,500	42,500	50,000
	<b>Sub total</b>			<b>322,500</b>	<b>1,827,500</b>	<b>2,150,000</b>

				<b>Cost(Birr)</b>		
	<b>7 General Purpose Equipment</b>					
<b>7.1</b>	Laundry Machine	<b>Numbers</b>	1	22,500	127,500	150,000
<b>7.2</b>	Kitchen Equipment & furniture	“	1unit	4,500	25,500	30,000
<b>7.3</b>	Office Furniture &Equipment	“	1unit	2,250	12,750	15,000
<b>7.4</b>	Ambulance Vehicle	“	1	52,500	297,500	350,000
<b>7.5</b>	Hospital Beds	“	25	11,250	63,750	75,000
	<b>Sub total</b>			<b>93,000</b>	<b>527,000</b>	<b>620,000</b>
	<b>Grand Total</b>			<b>846,180</b>	<b>4,795,020</b>	<b>5,641,200</b>

## 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 1,000 m<sup>2</sup>, out of which the built-up area is estimated to be 520 m<sup>2</sup>. The total cost of building and cost civil works, at an average cost of Birr 2,300 per m<sup>2</sup> is estimated to be Birr 2,760,000.

The details of the various buildings are given below:

1. Laboratory room      80 sq. meters
2. Surgical room        60 sq. meters
3. Recovery room        60 sq. meters
4. Cardiac care room    200 sq. meters
6. Offices                120 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**

<b>Sr. No</b>	<b>Location of the land</b>	<b>Land Grade</b>	<b>Initial Price in m<sup>2</sup></b>
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 5.3, the initial land lease rate ranges from Birr 1,167.3 to 132.3 per m<sup>2</sup>.

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<sup>2</sup> 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**

<b>Type of Service</b>	<b>Lease Period ( Years)</b>
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**

<b>Sr. No.</b>	<b>Service Type</b>	<b>Period of Payment According to the Grade of Towns</b>
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<sup>2</sup> for 99 years of holding is estimated at Birr 47.62 million. Assuming 5% of the total cost ( Birr 2.38 ) will be paid in advance as down payment and the remaining Birr 45.24 million will be paid in equal installments with in 50 years, the annual lease payment is estimated at Birr 904,855.

## **VI. MANPOWER AND TRAINING REQUIREMENT**

### **A. MANPOWER REQUIREMENT**

The envisaged hospital requires a total of 65 workers when working at full capacity in two shifts. The total annual labor cost including fringe benefits are given in Table 6.1.

### **B. TRAINING REQUIREMENT**

No special training is required.

**Table 6.1**  
**MANPOWER REQUIREMENT AND COST**

S/No.	Description	Quantity	Monthly Salary	Annual
1	Medical Director	1	3,500	42,000
2	Administrator	1	1,500	18,000
3	Doctor (cardiac Specialist)	1	3,200	38,400
4	Surgeon	2	2,200	52,800
7	Medical Doctor	2	3,000	72,000
8	Matron	1	2,000	24,000
9	Nurse	10	2,000	24,000
10	Health Assist	6	1,200	86,400
11	Health officer	3	1,500	54,000
13	X-ray – Technician	3	2,000	72,000
14	Asst X-ray	2	1,500	36,000
15	Lab technician	4	1,500	25,200
16	Card room Staff	3	700	25,200
17	Asst Lab technician	2	1200	28,800
18	Receptionist	1	750	9,000
19	Cleaners	4	350	16,800
20	Drivers	2	450	10,800
21	Guards	6	350	86,400
22	Laundry men	4	350	16, 800
23	Cookers	4	450	21,600
24	Purchaser	1	1,200	14,400
25	Store keeper	1	1,200	14,400
26	Cashier	1	1,200	14,400
	sub-total			448,400
	Employee Benefits (25% BS)			67,260
	<b>Grand Total</b>			<b>515,660</b>

## VII. FINANCIAL ANALYSIS

The financial analysis of the specialized 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
Tax holidays	5 years
Bank interest	8%
Discount cash flow	8.5%
Accounts receivable	30 days
Material local	30days
Work in progress	5 days
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days

#### **A. TOTAL INITIAL INVESTMENT COST**

The total investment cost of the project including working capital is estimated at Birr 13.20 million, of which 36 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**

<b>Sr. No.</b>	<b>Cost Items</b>	<b>Local Cost</b>	<b>Foreign Cost</b>	<b>Total Cost</b>
1	Land lease value	2,381.19	-	2,381.19
2	Building and Civil Work	2,760.00	-	2,760.00
3	Plant Machinery and Equipment	846.20	4795.02	5,641.20
4	Office Furniture and Equipment	846.18	-	846.18
5	Vehicle	150.00	-	150.00
6	Pre-production Expenditure*	1,077.30	-	1,077.30
7	Working Capital	352.79	-	352.79
	<b>Total Investment cost</b>	<b>8,413.66</b>	<b>4,795.02</b>	<b>13,208.66</b>

\* *N.B Pre-production expenditure includes interest during construction ( Birr 977.30 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 4.60 million (see Table 7.2). Medicine and medical supplies accounts for 42.69% of the operating cost. The other major components of the operation cost are depreciation, cost of finance and direct labour accounting for 19.06%, 16.07% and 6.72% of the total operation cost respectively. The remaining 15.46% is the share of utility, labour overhead, depreciation, repair and maintenance and administration cost.

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

<b>Items</b>	<b>Cost</b>	<b>%</b>
Medicine and medical supplies	1,965.00	42.69
Utilities	94.23	2.05
Maintenance and repair	282.06	6.13
Labour direct	309.40	6.72
Labour overheads	128.91	2.80
Administration Costs	206.26	4.48
Land Lease Cost	-	-
<b>Total Operating Costs</b>	<b>2,985.86</b>	<b>64.87</b>
Depreciation	877.12	19.06
Cost of Finance	739.79	16.07
<b>Total Production Cost</b>	<b>4,602.77</b>	<b>100</b>

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

Based on the projected profit and loss statement, the project will generate a profit through out its operation life. Annual net profit after tax will grow from Birr 15.2 million to Birr 2.77 million during the life of the project. Moreover, at the end of the project life the accumulated cash flow amounts to Birr 19.15 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.

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 21\%$$

### 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 5 years.

### 5. Internal Rate of Return

The internal rate of return (IRR) is the annualized effective compounded return rate that can be earned on the invested capital, i.e., the yield on the investment. Put another way, the internal rate of return for an investment is the discount rate that makes the net present value of the investment's income stream total to zero. It is an indicator of the efficiency or quality of an investment. A project is a good investment proposition if its IRR is greater than the rate of return that could be earned by alternate investments or putting the money

in a bank account. Accordingly, the IRR of this project is computed to be 16.20% 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 into a common measuring unit i.e. present value. It is a standard method for using the time value of money to appraise long-term projects. NPV is an indicator of how much value an investment or project adds to the capital invested. In principle a project is accepted if the NPV is non-negative.

Accordingly, the net present value of the project at 8.5% discount rate is found to be Birr 6.43 million which is acceptable.

#### **D. ECONOMIC BENEFITS**

The project can create employment for 10 persons. In addition to contributing to the improvement of the city's population health, the project will generate Birr 3.03 million in terms of tax revenue. The establishment of the project will contribute to improving the life of the residents of the City Administration.