



Pre-feasibility Study

SETTING-UP KIDNEY DIALYSIS CENTER

August 2021

“The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, and revenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA’s website and consult financial experts to stay current with market conditions.”

Small and Medium Enterprises Development Authority
Ministry of Industries and Production
Government of Pakistan

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1. DISCLAIMER

This information memorandum is to introduce the subject matter and provide a general idea and information on the said matter. Although, the material included in this document is based on data/information gathered from various reliable sources; however, it is based upon certain assumptions, which may differ from case to case. The information has been provided on, as is where is basis without any warranties or assertions as to the correctness or soundness thereof. Although, due care and diligence has been taken to compile this document, the contained information may vary due to any change in any of the concerned factors, and the actual results may differ substantially from the presented information. SMEDA, its employees or agents do not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The contained information does not preclude any further professional advice to be obtained by the user. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information which is necessary for making an informed decision, including taking professional advice from a qualified consultant/technical expert before taking any decision to act upon the information.

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Document Control

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2. EXECUTIVE SUMMARY

Kidney in the human body is a very important organ which works as a chemical cleaning factory. It controls body's fluid balance by filtering and removing waste products from blood and maintaining the right level of electrolytes. Cases of Kidney failure (also called End-stage Renal Disease ESRD) have increased manifold during recent years due to change in eating habits, extensive use of medicines, consumption of impure food and other health problems, such as diabetes, high blood pressure urinary tract infections (UTI), etc. Demand for dialysis centers in Pakistan is increasing due to increasing cases of kidney failures. Dialysis is the process of removing waste products and excess fluid from the body. Dialysis becomes necessary when kidneys are not able to adequately filter the blood. It is carried out by passing the body's blood through a machine which is known as Dialyzer machine.

There are two acceptable methods to perform dialysis. These methods are known as "Hemodialysis and "Peritoneal dialysis". Both of these have different mechanisms to perform the dialysis process. The choice of method depends upon the cost of treatment, patient's health and availability of the treatment method. As compared to peritoneal dialysis, hemodialysis is a more commonly used method. This pre-feasibility document has been based on hemodialysis method.

Hemodialysis method uses a hemodialyzer machine to remove waste and extra fluid from the blood. The blood is removed from the body of the patient and filtered by passing it through hemodialyzer machine. The blood is removed from the patient's body through a flexible tube known as catheter, which is inserted into the patient's vein for this purpose. The filtered blood is then returned to the patient's body through another catheter. Thus the system works like an artificial kidney.

The proposed business will ideally be located in metropolition cities like Karachi, Lahore, Faisalabad, Peshawar, Islamabad or medium cities like Rawalpindi, Multan, Quetta, Sailkot, Sukkur, Mardan, etc. Locating the proposed unit in these cities would give competitive advantage to the business by have access to a larger customer base and availability of relatively competent and skilled technicians. The proposed unit can also be set up in other small cities / districts. Operating hours of dialysis center will be dependent on the traffic of customer in different cities. The center may remain open for longer period of time in those areas where there is a large population as compared to that in less populated areas.

This "Pre-feasibility Document" provides details for setting up a kidney dialysis center, which has a capacity to perform 7,200 dialysis in a year at 100% capacity. The initial capacity utilization in "Year 1" is expected to be 65%, which comes out to be 4,680 dialysis processes.

The center will be set up in a rented building with an area of 2,250 square feet. The project requires a total investment of PKR 17.88 million. This includes capital investment of PKR 16.40 million and working capital of PKR 1.47 million. The project will be financed through 100% equity. The Net Present Value (NPV) of project is PKR 16.85 million with an Internal Rate of Return (IRR) of 31% and a Payback period of 3.39 years. This project is expected to generate Gross Annual Revenues of PKR 23.40

million during 1st year, Gross Profit (GP) ratio ranging from 49% to 56% and Net Profit (NP) ratio ranging from 5% to 26% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 57% (4,101 dialysis) with breakeven revenue of PKR 20.50 million.

The proposed project may also be established using leveraged financing. At 50% financing at a cost of KIBOR+3%, the proposed unit provides Net Present Value (NPV) of PKR 20.89 million, Internal Rate of Return (IRR) of 31% and Payback period of 3.40 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 5% to 25% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 57% i.e. (4,132 dialysis) with breakeven revenue of PKR 20.66 million.

The proposed business will provide employment opportunities to 22 people who will work in 2 shifts of 8 hours each. The human resource include an MBBS doctor, 5 Technicians per shift, a Ward boy per shift, two security guards one each for day and night, two office boys and an Admin & Accounts officer. High return on investment and steady growth is expected with the doctor having prior experience in this area. The legal form of this project is proposed as "Sole Proprietor" but the business may also be established as "Partnership Concern".

3. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral

research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

National Business Development Program for SMEs (NBDP) is a project of SMEDA, funded through Public Sector Development Program of Government of Pakistan.

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of

providing an effective handholding to SMEs. The proposed program aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

4. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to provide information to the potential investors about setting-up a “Kidney Dialysis Center”. The document provides a general understanding of the business to facilitates potential investors in crucial and effective investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business setup and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form the basis of any investment decision.

5. BRIEF DESCRIPTION OF PROJECT & SERVICES

Kidney failure (also called End-stage Renal Disease ‘ESRD’ or Chronic Kidney Disease ‘CKD’) is one of of growing concerns of recent times as the cases are increasing rapidly. Diabetes is the most common cause of kidney failures; followed by high blood pressure. Other causes are hypertension, change in eating habits, use of drugs, consumption of impure food and urinary tract infections. Demand for dialysis centers in Pakistan is increasing due to increasing cases of kidney failures.

Dialysis is an artificial way of eliminating waste and unwanted water from blood. It substitutes the natural work of kidneys and that is the reason it is also known as renal replacement therapy (RRT). Healthy kidneys regulate the body’s level of water and minerals and remove waste. A person who has lost 85%-90% of their kidney function is a likely candidate for dialysis.

A healthy person’s kidneys filter about 120-150 quarts¹ of blood each day. If the kidneys are not working properly, wastes start building up in the blood which may lead to coma and death. The cause might be chronic or a long term condition such as injury or a short term condition such as illness that affects the kidneys. Dialysis filters out the waste products from the blood to stop them reaching hazardous levels.

Dialysis helps patients whose kidneys have failed, but it is not as efficient as a normal

¹ Quart or qt is a unit equal to 0.9464 liters

kidney. Patients who receive dialysis need to be careful about what and how much they drink and eat, and they need to take medication.

People who have dialysis can work, lead normal lives, and travel, as long as they have a continued access to dialysis treatment.

The proposed Dialysis center will run 16 hours in a day for 360 days in year. Almost every person suffering from ESRD needs dialysis twice a week.

Types of Dialysis

There are two main approaches to conduct dialysis:

- Intermittent Hemodialysis (IHD)
- Peritoneal Dialysis (PD)

The choice of treatment depends upon the patient's situation, availability of the treatment method and the cost. This pre-feasibility document is based on hemodialysis as it is the most commonly used method. However, peritoneal dialysis is also briefly explained for understanding of the readers.

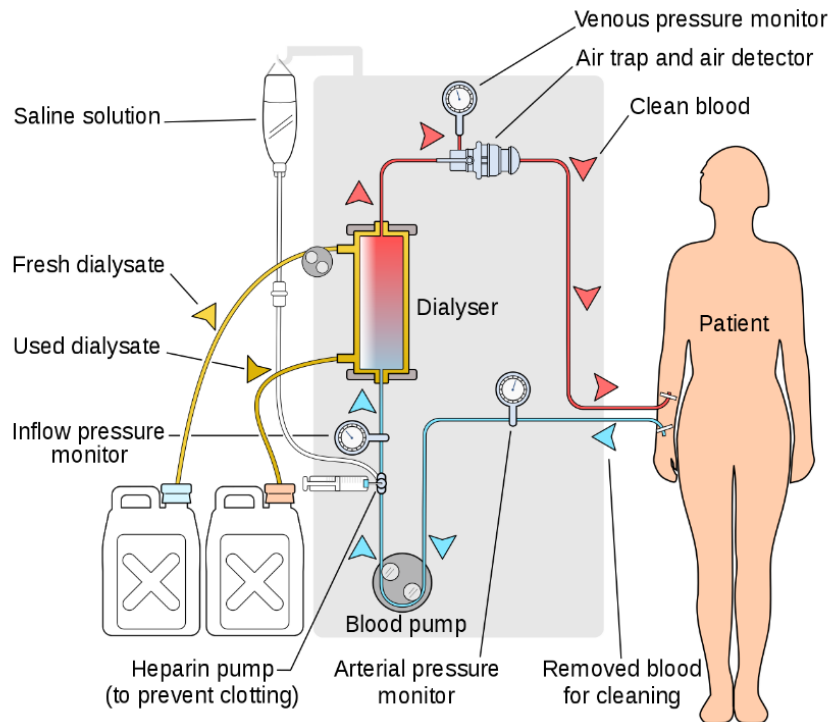
Brief description of each method is provided as under:

- **Intermittent Hemodialysis**

In Hemodialysis, the blood circulates outside the body. It goes through a machine with special filters. The blood comes out of the patient through a flexible tube known as a catheter. The tube is inserted into the vein. Just like the kidneys, the filters in the machine remove the waste products from the blood. The filtered blood then returns to the patient's body through another catheter. The system works like an artificial kidney.

Those who are going to have hemodialysis need surgery to enlarge a blood vessel, usually in the arm. Enlarging the vein makes it possible to insert the catheters. Hemodialysis is usually done three times a week depending upon the functionality of the kidneys.

Hemodialysis may be done in a special dialysis center in a hospital or at home. If a person does not feel confident getting dialysis at home, he/she should attend sessions at the hospital or dialysis center. Figure 1 shows hemodialysis process.

Figure 1 Hemodialysis Process

- **Peritoneal Dialysis**

The basic principle, followed in peritoneal dialysis, is diffusion. In peritoneal dialysis, a sterile dialysate solution, rich in minerals and glucose, is run through a tube into the peritoneal cavity, the abdominal body cavity that surrounds the intestine. It has a semi-permeable membrane, the peritoneal membrane.

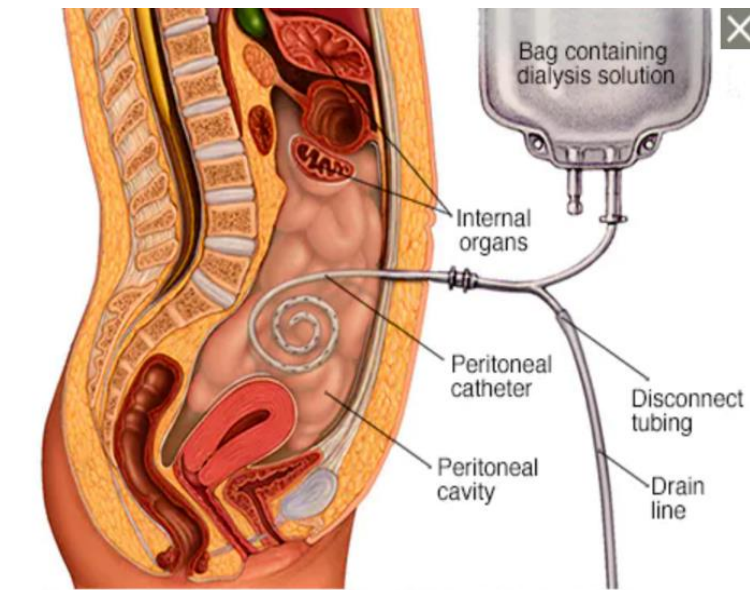
Peritoneal dialysis uses the natural filtering ability of the peritoneum, the internal lining of the abdomen, to filter waste products from the blood. The dialysate is left in the peritoneal cavity for some time, so that it can absorb waste products. Then it is drained out through a tube and discarded. This exchange, or cycle, is normally repeated several times during the day, and it can be done overnight with an automated system.

The elimination of unwanted water, or ultra filtration, occurs through osmosis. The dialysis solution has a high concentration of glucose which causes osmotic pressure. The pressure causes the fluid to move from the blood into the dialysate. As a result, more fluid is drained than is introduced.

Peritoneal dialysis gives patients more freedom and independence, because it can be done at home instead of going to the clinic several times each week. It can also be done while traveling with a minimum of specialized equipment. Before starting peritoneal dialysis, the patient needs a small surgical procedure to insert a catheter into the abdomen. This is kept closed off, except when being used for dialysis.

Figure 2 shows peritoneal dialysis.

Figure 2 Peritoneal Dialysis



There are two main types of peritoneal dialysis:

Continuous Ambulatory Peritoneal Dialysis (CAPD)

Continuous ambulatory peritoneal dialysis requires no machinery, and the patient or a care giver can perform it. The dialysate is left in the abdomen for up to 8 hours and then replaced with a fresh solution straight away. This happens every day, four or five times per day.

Continuous Cyclic Peritoneal Dialysis (CCPD)

Continuous cyclic peritoneal dialysis or automated peritoneal dialysis uses a machine to exchange the fluids. It is generally done every night, while the patient sleeps. Each session lasts from 10 to 12 hours. After spending the night as attached to the machine, most people keep the fluid inside their abdomen during the day. Some patients may need another exchange during the day.

Pros

Patients can control extra fluid more easily, and this may reduce stress on heart and blood vessels. Patients are able to eat more and have to use fewer medicines. The patient can also do more of his daily activities and it is easier to work or travel.

Cons

The abdomen or belly of some patients, particularly those who are morbidly obese or those with multiple prior abdominal surgeries, may make peritoneal dialysis treatment difficult or impossible. Peritonitis (infection of abdomen) is an occasional complication although should be infrequent with appropriate precautions.

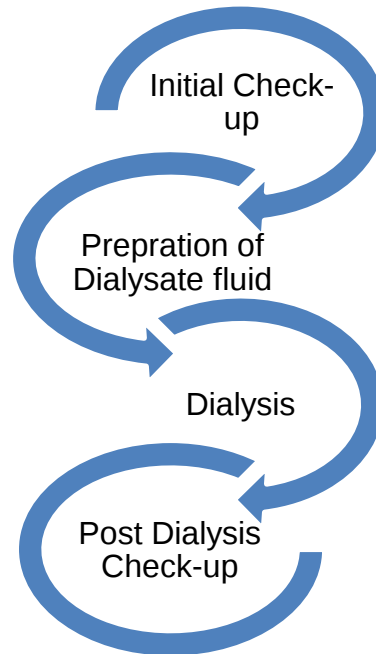
5.1. Service Flow

This pre-feasibility document is based on Hemodialysis process which is discussed in

detail in the following paragraphs:

- **Hemodialysis Process flow**

Figure 3 Process flow



Initial Checkup

When the patient arrives at dialysis center, *he/she* is given some rest and is called for basic initial check-up which includes temperature, blood pressure and weight. The patient with normal condition is sent for dialysis.

Preperation of Dialysate Fluid

The first step in dialysis process is preperation of dialysate fluid. It is made up of an acidified solution, bicarbonate and purified water. The acidified solution contains electrolytes and minerals. The other solution is bicarbonate or bicarb, which is like baking soda. Both are mixed inside the machine with purified water.

Dialysis Process

In dialysis ward, a bed is allotted to the patient and the dialysis machine is prepared to start dialysis. The machine works automatically and gives indications when something goes wrong and/or when the process is finished.

Plastic containers are attached to the machine which hold the dialysate. Fresh dialysate from the machine enters into the Dialyzer throughout the process. Impurities are filtered out of the patient's blood into the dialysate. Dialysate containing unwanted waste products and excess electrolytes leave the dialyzer and are disposed off into the drain.

Blood tubing carries the blood from the body to the dialyzer. The blood tubing is threaded through the blood pump. The pumping action of the blood pump pushes the patient's blood through the dialyzer and back into the patient's body.

Sometime, the blood tends to clot when it moves through the blood tubing. To prevent this, a drug is given called "Heparin". Doctor prescribes the amount of heparin for the patient at each treatment. That amount of heparin is drawn up into a syringe then placed on the machine into the "heparin pump." The heparin pump is programmed to release the right amount of heparin into patient's blood tubing during dialysis process.

To prevent mixing of blood and air in blood tubing, there are two air traps in the machine. One trap is before dialyzer and the second one is after dialyzer. Traps remove any air that may get into the system. If any air does get past these traps, an internal machine air sensor shuts down the blood pump and an alarm sounds to alert the technician about the problem.

Figure 4 Dialyzer Machine



Use of Reverse Osmosis Plant

Water to be used during the dialysis process has to be pure. This is done using a Reverse Osmosis plant. Reverse osmosis is a common process to purify or desalinate contaminated water by forcing water through a membrane. Water produced by reverse osmosis may be used for a variety of purposes, including desalination, wastewater treatment, concentration of contaminants, and the reclamation of dissolved minerals. Dialysis patients need purified water because haemodialysis may expose the patient to more than 300 liters of water per week across the semipermeable membrane of the haemodialyser. Healthy individuals seldom have a weekly oral intake of water above 12 liter. Around 30 times increase in water exposure for dialysis patients requires

control and monitoring of water quality to avoid excess of known or suspected harmful elements which may be present in the water and may get transmitted to the patient. Figure 5 shows a Reverse Osmosis Plant.

Figure 5 Reverse Osmosis-Plant



Post Dialysis Check-up

After the whole process is completed, the patient is given some rest; following which a post performance check-up is done. Temperature and blood pressure are checked. The patient with normal condition is free to go home.

5.2. Installed and Operational Capacities

The proposed project shall, at maximum capacity of 100%, will perform 7,200 dialysis annually. However, during initial year of operation, the proposed unit is expected to achieve 65% of its installed capacity. The unit would operate in a two shifts of 8 hours per day based on 360 working days in a year, the unit shall perform 4,680 dialysis during first year of operation. The operations of proposed business will continue uninterrupted during whole year i.e. 360 days. Table 1 depicts the installed and operational capacities of the proposed unit for dialysis.

Table 1 Installed and Operational Capacity

No of machines	Time required per Dialysis (hrs)	Total Dialysis per day	Capacity at 100% (360 days)	Initial Capacity at 65%
5	4	20	7,200	4,680

6. CRITICAL FACTORS

The following factors should be taken into account while making the investment decision:

- Use of state-of-the-art equipment
- Availability of qualified staff
- Location of the Dialysis center
- Confidentiality of patients' medical record
- Care of physical health and hygiene of patient
- Compliance with required health standards

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

For the success of the business, it is necessary to determine the target market. So the proposed business would ideally be located in metropolition cities like Karachi, Lahore, Faisalabad, Peshawar, Hyderabad, Islamabad or medium cities like Rawalpindi, Multan, Quetta, Sailkot, Sukkur, Mardan, Gujranwala, Sialkot, Gujrat, etc. Locating the proposed business in these cities would provide advantage of being close to large population groups. Further, the patients from urban areas also travel to such larger cities for dialysis, which will increases the patient turnover. Availability of qualified technicians in the above-mentioned cities is also easy. The service unit would target middle class, upper middle class, and elite class.

8. POTENTIAL TARGET CUSTOMERS / MARKETS

Pakistan ranks eighth in the list of countries with a high rate of kidney diseases, with 17 million people suffering from such diseases². Chronic Kidney Disease (CKD) is rapidly growing in Pakistan due to late diagnosis, extensive use of medicines, kidney stone diseases, urinary tract infections and increasing number of patients suffering from diabetes and hypertension³.

Diabetes patients are also increasing day by day in Pakistan. According to a research published by International Diabetes Federation on diabetes day 2019, almost 17.1% of the adult population of Pakistan is living with Diabetes and the number is rising day by day.

Hypertension patients are also increasing day by day in Pakistan. According to the National Survey of Pakistan, hypertension affects 18% of adults, and 33% of adults above 45⁴ years of age. According to another report, 18% of Pakistani people suffer

²<https://gulfnnews.com/world/asia/pakistan/17-million-pakistanis-suffering-from-kidney-diseases-1.62638490>

³<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2880743/>

⁴<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2880743/>

from hypertension; with every 3rd person over 40 becoming increasingly vulnerable to a wide range of diseases.

As per medical researches, around 10% of the world population has some form of kidney damage. there is a long way ahead to raise awareness about the dangers of kidney disease. The latest numbers show that Chronic Kidney Disease is predicted to increase by 17% over the next decade and is now recognised by WHO and other organisations as a global public health issue.

According to another estimate, there are around 850 million people worldwide having some sort of kidney diseases due to different causes. Chronic Kidney Diseases now constitute the sixth fastest growing cause of death; with around 2.4 million deaths per year.

As inferred from the above data, the patient rate is growing day by day and current healthcare facilities are just not enough to accomodate all patients which brings up the need for opening of new dialysis centers in Pakistan. This brings a good opportunity for potential investor to invest in the proposed unit.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of the proposed business of “Kidney Dialysis Center”. Various costs and revenue related assumptions along with results of the analysis are outlined in this section.

The projected Income Statement, Cash Flow Statement and Balance Sheet are attached as Annexure.

9.1 Initial Project Cost Estimates

The details of initial project cost calculated for the proposed Dialysis Center are shown in Table 2.

Table 2 Initial Project Cost Estimate

Description	Cost (PKR)	Reference
Land	-	9.1.1
Building/Infrastructure	318,621	9.1.2
Machinery & equipment	10,967,500	9.1.3
Office Equipment	1,214,000	9.1.4
Furniture & Fixtures	1,796,900	9.1.5
Office Vehicals	1,292,800	9.1.6
Pre-operating Costs	196,009	9.1.1
Security against Building	607,500	9.1.8
License Fee	10,000	9.1.9

Total Capital Costs (PKR)	16,403,330	
Working Capital	1,472,365	9.1.10
Total Investment (PKR)	17,875,695	

9.1.1. Land

The Dialysis Center will be established in a rented building to avoid the high cost of land. Suitable buildings for setting up clinics like this can be easily found on rent. Therefore, no land cost has been added to the project cost. The required space breakup is shown in

Table 3.

Table 3 Land Area Breakup

Description	Number	Area Sq. Ft.	Area %
Doctor Room	1	144	6%
Accountant Office	1	144	6%
RO Plant Room	1	144	6%
Ward (Table 4)	1	500	22%
Male Staff Room	1	132	6%
Female Staff Room	1	132	6%
Waiting Area	1	256	11%
Store Room	1	144	6%
Washrooms	4	140	6%
Change Room - Males	1	132	6%
Change Room - Females	1	132	6%
Total Covered Area		2000	89%
Parking area		250	11%
Total		2,250	100%

Table 4 Ward Area

Item	Per bed space requirement (sq.ft)	No of beds	Total Area (sq.ft)
Bed, machine, side cabinets	100	5	500

9.1.2. Building

There will be no cost of building construction as the proposed business will be started in a rented facility. However, there will be a renovation cost; required to make the building usable for the business. The proposed project requires electricity load of 10 KW which for which an electricity connection under the commercial supply tariff will be required. Building rent of PKR 202,500 per month has been included in the operating cost. Building renovation cost is shown in Table 5.

Table 5 Renovation Cost Details

Cost Item	Unit Of Measurement	Total Liter / Area / Number	Cost/Unit/ Sq.feet	Total Cost (PKR)
Paint Cost	Liter	73	500	36,540
Labour Cost	Feet	7,308	10	73,081
Wall Racks	Units	9	5,000	45,000
Curtains	Units	7	2,000	14,000
Blinds	Units	10	15,000	150,000
TOTAL (PKR)				318,621

9.1.3. Machinery and Equipment

For carrying out dialysis, Fresenius 4008 machine has been proposed due to its reliability and efficiency.

The proposed project also requires a Reverse Osmosis (RO) plant which uses the pump to push water through semi permiable membrane which purifies water and softens it by removing organic and inorganic minerals i.e bacteria and endotoxins.

Table 6 provides details of machinery and equipment required for the project:

Table 6 Machinery and Equipment

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
FRESENIUS 4008 (Dialysis Machine)	5 ⁵	2,000,000	10,000,000
Reverse Osmosis Plant (RO)	1	400,000	400,000
Sphygmomanometer (Blood Pressure measuring apparatus)	6	2,000	12,000

⁵ The proposed dialysis center will have five machines, one each for Hepatitic B, C and HIV positive patients and 2 for other patients.

Weighing Machine	1	1,500	1,500
Stethoscope	6	2,500	15,000
Thermometer	6	1,500	9,000
Glucometer	6	5,000	30,000
Instrument Sterilizer	6	25,000	150,000
Backup Generator - 12.5 KVA	1	350,000	350,000
Total			10,967,500

9.1.4. Office Equipment

Table 7 presents the office equipment requirement for the proposed unit.

Table 7 Office Equipment

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Laptop Computers	1	80,000	80,000
Printers	1	40,000	40,000
Desktop Computer	2	50,000	100,000
Security System (Cameras 2MP)	4	2,000	8,000
DVR	1	12,000	12,000
LED	1	40,000	40,000
Air Conditioners (1.5 ton Inverter)	9	90,000	810,000
Ceiling Fan	14	4,500	63,000
Exhaust Fan	8	2,000	16,000
Water Dispensers	2	20,000	40,000
Wi-Fi / Internet Routers	1	5,000	5,000
Total	44		1,214,000

9.1.5. Furniture and Fixture

Table 8 gives details of the furniture and fixtures required for the project:

Table 8 Furniture and Fixtures

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Executive Table - Doctor Room	1	30,000	30,000

Reception Counter	1	25,000	25,000
Executive Chairs - Doctor Room	1	20,000	20,000
Office / Staff Chairs	9	10,000	90,000
Visitors Chairs	12	10,000	120,000
Office Table	1	25,000	25,000
Dialysis Bed (Automatic) – 1 each with FRESNIUS 4008	5	140,000	700,000
Stretcher	3	8,300	24,900
Bed Side Cabinet	5	8,000	40,000
Wheel Chairs	3	11,000	33,000
IV Stand with Plastic Wheel	6	5,000	30,000
Sitting Stools for attendants	6	3,500	21,000
Bed Pans	5	8,000	40,000
Ward Attendant Benches	5	3,600	18,000
Bed Side Screens	5	5,000	25,000
Sofa Sets	12	35,000	420,000
Waiting area tables	4	15,000	60,000
Small Waste Bins	8	2,000	16,000
Large Medical Waste	2	2,500	5,000
Patient beds simple	3	18,000	54,000
Total			1,796,900

Waste-bins for medical waste are used for plastic waste, surgical waste, and infectious waste.

9.1.6. Office Vehicles

Details of vehicles required for the project are given in Table 9.

Table 9 Office Vehicles

Cost Item	Number of Vehicles	Unit Cost (PKR)	Total
Bolan-van	1	1,200,000	1,200,000
Motorcycle	1	80,000	80,000
Transfer / Registration Charges			12,800
Total Cost (PKR)			1,292,800

9.1.7. Pre-Operating Cost

Details of pre operating cost for the project are given in

Table 10.

Table 10 Pre-Operating Cost

Cost Item	No.	Hiring Before Year 0 Month(s)	Monthly salary (PKR)	Total Cost (PKR)
Utilities expenses				131,009
Driver	1	1	25,000	25,000
Office Boy	2	1	20,000	40,000
Total Cost				196,009

9.1.8. Security against Building

Details of advance security against building for the project are given in Table 11.

Table 11 Advance against Building

Description	Months	Rent	Total
Security	3	202,500	607,500
Total Cost			607,500

9.1.9. Licensing Fee

Details of licensing fee for the project is given in Table 12.

Table 12 Licensing Fee

Description	Duration (Years)	Total (PKR)
Punjab Healthcare Commision/ Sindh Heathcare Commission	5	10,000
Total Cost		10,000

License fee includes fee for Single Speciality Clinic as prescribed by Punjab Healthcare Commission⁶ and Sindh Healthcare Commission⁷. The fee may differ for establishing such centers in other provinces or federal capital.

9.1.10. Working Capital

Details of working capital required for the project is given in Table 13.

Table 13 Working Capital

Cost Item	Total Cost (PKR)
-----------	------------------

⁶ <https://www.phc.org.pk/licensingfee.aspx>

⁷ <http://shcc.org.pk/page.aspx/licensing/licensing-fee>

Consumables inventory	518,195
Upfront building rent	202,500
Upfront insurance payment	251,670
Cash	500,000
Total Initial Working Capital Cost (PKR)	1,472,365

9.2 Breakeven Analysis

Table 14 shows calculation of breakeven analysis.

Table 14 Breakeven Analysis

Description	Amount First Year (PKR)	Ratios
Sales (PKR) – A	23,400,000	100%
Variable Cost (PKR) – B	11,898,250	51%
Contribution (PKR) (A-B) = C	11,501,750	49%
Fixed Cost (PKR) – D	9,986,511	43%
Contribution Margin	49%	
Breakeven Revenue (PKR)	20,317,286	
Dialysis at Break even	4,063	
Breakeven Capacity	56%	

9.3 Revenue Generation

Based on 65% capacity utilization, sales revenue during the first year of operations is shown in Table 15.

Table 15 Revenue Generation

Item	Service charges (PKR)	Number of Dialysis	Total Revenue (PKR)
Dialysis	5,000	4,680	23,400,000

9.4 Variable Cost

Variable costs of the project are provided in Table 16.

Table 16 Variable Cost

Description of Costs	Amount (PKR)
Dialyzer Kit (Table 17)	5,616,000
Consumables (Table 18)	602,342
Direct Human Resource Cost	4,800,000

Electricity	879,908
Total Variable Cost	11,898,250

A Dialyzer Kit includes following items:

- Polyurethane material, soft, geometrically designed conical tip to ensure easy insertion and prevent catheter related trauma
- Hemodialysis catheters are single/double/multiple lumen catheters that provide temporary vascular access for hemodialysis until a permanent process is available or until another type of dialysis therapy is substituted.
- The multiple lumen catheter contains two large bore lumens that are connected to the dialysis machine to form a complete circuit for the removal and return of the patient's blood during dialysis process.
- Clear silicon lumen extensions for enhanced visibility and safety. Sterile / disposable / individually tray packed.

Table 17 Dialyzer Kit

Cost Item	Annual consumption	Per unit cost (PKR)	Annual cost (PKR)
Dialyzer kit	4,680	1,200	5,616,000
Total Cost			5,616,000

Table 18 Consumables

Cost Item	Consumption per year (No.)	Unit Cost (PKR)	Total Cost (PKR)
Surgical Face Mask (boxes)	72	130	9,360
Surgical Gloves (boxes)	47	1,300	60,840
Medical Overall (units)	20	700	14,000
Hand Sanitizer (bottles)	72	250	18,000
Disinfectants for Machine Cleaning	20	6,000	120,000
Sweeper Kit (Table 19)	2	21,870	43,740
Bedsheets (Units)	60	750	45,000
Cotton Absorbent (Packs) 500 Grams Pack	94	400	37,440
Laundry (Units)	4,680	60	280,800
Tissue papers	300	50	15,000

Tissue rolls	300	50	15,000
Soaps	200	100	20,000
Detergents	100	200	20,000
Insecticides	50	150	7,500
Air Fresheners	100	250	25,000
Cotton Rolls	200	50	10,000
Bandages	500	150	75,000
Doctors' Prescription Pads	50	1,000	50,000
Towels	100	350	35,000
Pillows	100	250	25,000
Total Cost			926,680
No. of dialysis per year @ 100% capacity utilization	7,200		
Cost per dialysis (PKR)	129		
Dialysis during the year at 65% capacity	4,680		
Total Cost (PKR)	603,720⁸		

Table 19 Sweeper Kit

Item	No.	Cost	Total
Mop	4	200	800
Bucket	1	400	400
Besoms	1	250	250
Phenyl	120	160	19,200
Wiper	2	350	700
Floor Broom	1	270	270
Cob Web Cleaner	1	250	250
Total			21,870

Fixed Cost Estimate

Table shows the estimated fixed cost of the project.

Table 20 Fixed Cost Estimate

⁸ The difference is due to rounding off.

Description of Costs	Annual cost (PKR)
Administration expense	3,300,000
Administration benefits expense	405,000
Building rental expense	2,430,000
Electricity	632,197
Water expense	18,000
Gas expense	66,000
Communications expense (phone, internet, etc.)	165,000
Office vehicles running and maintenance expense	198,000
Office expenses (stationery, entertainment etc.)	132,000
Promotional expense	117,000
Insurance expense	251,670
Depreciation expense	2,230,442
Amortization of pre-operating costs	39,202
Amortization of legal, licensing, and training costs	2,000
Total Fixed Cost (PKR)	9,986,511

9.5 Financial Feasibility Analysis

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the study, which is shown in Table 20.

Table 20 Financial Feasibility Analysis

Description	Project
IRR	31%
NPV (PKR)	16,849,276
Payback Period (years)	3.39
Projection Years	10
Discount rate used for NPV	15%

9.6 Financial Feasibility Analysis with 50% Debt

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the study on the basis of Debt: Equity Model (50:50), which is shown in Table 21.

Table 21 Financial Feasibility Analysis with 50% Debt

Description	Equity	Project
IRR	44%	31%
NPV (PKR)	18,893,616	20,891,370
Payback Period (years)	3.02	3.40
Projection Years	10	10
Discount rate used for NPV	15%	13%

9.7 Human Resource

For the 1st year of operations, the proposed business shall require the workforce at a salary cost shown in Table 22.

Table 22 Human Resource Requirement

Post	No. of Employees	Monthly Salary (PKR)	Total Salary per Month	Annual Salary (PKR)
Admin and Accounts Officer	1	40,000	40,000	480,000
Technician - Diploma Holder/BS	10	40,000	400,000	4,800,000
Drivers	1	25,000	25,000	300,000
Security Guards	2	20,000	40,000	480,000
Office Boys	2	20,000	40,000	480,000
Sweepers	2	20,000	40,000	480,000
Receptionists	2	25,000	50,000	600,000
Ward Boys	2	20,000	40,000	480,000
Total	22			8,100,000

10. CONTACT DETAILS

Names of some relevant suppliers of machinery and equipment are provided in Table 24..

Table 23 Suppliers of Machinery and Equipment

Name	Item	Contact No	E.mail/Website
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Pak Surgical – Lahore	Phygmomanomete r	(042) 37356400	www.paksurgical.pk
Pak Surgical – Lahore	Stethoscope	(042) 37356400	www.paksurgical.pk
Pak Surgical – Lahore	Weighing Machine	(042) 37356400	www.paksurgical.pk
Megmedius - Karachi	Medical Supplies	+92 332 3516401	https://megmedius.com
Medical Center - Lahore	Medical Overall	(042) 35761699	
Al Ghani Medical and Surgical - Sheikhpura	Hospital beds	0321 6557789	www.alghani.pk/
Sahara iO - Islamabad	Wheel chairs	0318 4238050	saharaio-wheelchair.business.site
Zirar Enterprises – Lahore	Stretcher	0322 4602203	zirarenterprises.com
Swastik Surgicals - Peshawar	Dialyzer	+91 70117 48508	www.swastiksurgicals.com
Dora Enterprises – Quetta	Dialyzer	0345 4212000	www.doraenterprises.webs.com

11. USEFUL WEB LINKS AND CONTACTS

Table 24 Useful Web Links

Name of Organization	E-mail Address
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Ministry of National Health Services Regulations and Coordination	www.nhsrsc.gov.pk/

Specialized Healthcare and Medical Education Department Lahore	health.punjab.gov.pk/
Government of Sindh	www.sindh.gov.pk/
Government of Balochistan	balochistan.gov.pk/
Government of KPK	kp.gov.pk/
Government of Gilgit Baltistan	gilgitbaltistan.gov.pk/
Government of Azad Jammu & Kashmir	www.ajk.gov.pk/
Sindh Institute of Urology and Transplantation (SIUT)	www.siut.org
Pakistan Kidney And Liver Transplant Institute (PKLI)	pkli.org.pk/
Ministry of National Health Services Regulations and Coordination	www.nhsrsc.gov.pk
World Health Organization	www.emro.who.int
Security and Exchange Commission of Pakistan	www.secp.gov.pk
State Bank of Pakistan	www.sbp.gov.pk
Federal Board of Revenue	www.fbr.gov.pk
Pakistan Medical Commission	www.pmc.gov.pk

Table 25: Health Care Commissions - Contact Numbers

Name of Organization	Contact
Pakistan Medical Commission	03311006191
Punjab Healthcare Commission	042-99333161
Sindh Healthcare Commission	111-117-422
Khyber Pakhtunkhwa Healthcare Commission	091-9213242
Balochistan Healthcare Commission	081-9202287
Directorate of Health Services Gilgit Baltistan	05811-920280
Department of Health Services Azad Jammu & Kashmir	0582-2920015

12. ANNEXURES

12.1. Income Statement

Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	23,400,000	27,736,800	32,709,612	38,402,538	44,910,168	52,338,839	57,607,615	63,406,782	69,789,731	76,815,230
<i>Cost of sales</i>										
Dialyzer Kit	5,616,000	6,656,832	7,850,307	9,216,609	10,778,440	12,561,321	13,825,828	15,217,628	16,749,535	18,435,655
Consumables	602,342	713,976	841,982	988,524	1,156,038	1,347,260	1,482,884	1,632,161	1,796,465	1,977,309
Direct Human Resource Cost	4,800,000	5,265,600	5,776,363	6,336,670	6,951,327	7,625,606	8,365,290	9,176,723	10,066,865	11,043,351
Electricity	879,908	1,033,204	1,207,021	1,403,815	1,626,319	1,877,574	2,047,244	2,232,247	2,433,968	2,653,917
Total cost of sales	11,898,250	13,669,612	15,675,673	17,945,618	20,512,125	23,411,762	25,721,246	28,258,759	31,046,834	34,110,233
Gross Profit	11,501,750	14,067,188	17,033,939	20,456,920	24,398,043	28,927,077	31,886,369	35,148,023	38,742,897	42,704,997
	49%	51%	52%	53%	54%	55%	55%	55%	56%	56%
<i>General administration & selling expenses</i>										
Administration expense	3,300,000	3,620,100	3,971,250	4,356,461	4,779,038	5,242,604	5,751,137	6,308,997	6,920,970	7,592,304
Administration benefits expense	405,000	444,285	487,381	534,657	586,518	643,411	705,821	774,286	849,392	931,783
Building rental expense	2,430,000	2,673,000	2,940,300	3,234,330	3,557,763	3,913,539	4,304,893	4,735,383	5,208,921	5,729,813
Electricity	632,197	742,337	867,222	1,008,614	1,168,480	1,349,001	1,470,906	1,603,827	1,748,760	1,906,789
Water expense	18,000	19,627	21,400	23,334	25,443	27,742	30,249	32,982	35,963	39,213
Gas expense	66,000	72,402	79,425	87,129	95,581	104,852	115,023	126,180	138,419	151,846
Communications expense (phone, internet etc.)	165,000	181,005	198,562	217,823	238,952	262,130	287,557	315,450	346,048	379,615
Office vehicles running and maintenance expense	198,000	217,206	238,275	261,388	286,742	314,556	345,068	378,540	415,258	455,538
Office expenses (stationery, entertainment etc.)	132,000	144,804	158,850	174,258	191,162	209,704	230,045	252,360	276,839	303,692
Promotional expense	117,000	138,684	163,548	192,013	224,551	261,694	288,038	317,034	348,949	384,076
Insurance expense	251,670	213,920	176,169	138,419	100,668	62,918	25,167	425,865	361,985	298,105
Depreciation expense	2,322,542	2,322,542	2,322,542	2,322,542	2,322,542	2,322,542	1,558,982	3,858,038	3,858,038	3,858,038
Amortization of pre-operating costs	39,202	39,202	39,202	39,202	39,202	-	-	-	-	-
Amortization of legal, licensing, and training costs	2,000	2,000	2,000	2,000	2,000	2,882	2,882	2,882	2,882	2,882
Subtotal	10,078,611	10,831,113	11,666,125	12,592,169	13,618,640	14,717,576	15,115,769	19,131,824	20,512,424	22,033,695
Operating Income	1,423,140	3,236,074	5,367,814	7,864,750	10,779,403	14,209,501	16,770,600	16,016,199	18,230,473	20,671,302
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	303,500	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	323,200	-	-	-
Earnings Before Interest & Taxes	1,423,140	3,236,074	5,367,814	7,864,750	10,779,403	14,209,501	20,139,175	16,016,199	18,230,473	20,671,302
Earnings Before Tax	1,423,140	3,236,074	5,367,814	7,864,750	10,779,403	14,209,501	20,139,175	16,016,199	18,230,473	20,671,302
Tax	292,500	517,215	1,436,953	2,061,188	3,109,336	7,957,850	9,736,752	8,499,860	872,372	960,190
NET PROFIT/(LOSS) AFTER TAX	1,130,640	2,718,860	3,930,860	5,803,563	7,670,067	6,251,650	10,402,422	7,516,339	17,358,102	19,711,112

12.2. Balance Sheet

Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	500,000	3,436,523	6,798,322	10,211,899	13,971,788	17,876,146	20,251,781	11,418,642	22,700,267	23,110,643	28,253,545
Accounts receivable		-	-	-	-	-	-	-	-	-	-
Dialyser Kit Inventory	468,000	554,736	654,192	768,051	898,203	1,046,777	1,152,152	1,268,136	1,395,795	1,536,305	-
Consumables inventory	50,195	59,498	70,165	82,377	96,336	112,272	123,574	136,013	149,705	164,776	-
Pre-paid building rent	202,500	222,750	245,025	269,528	296,480	326,128	358,741	394,615	434,077	477,484	-
Pre-paid insurance	251,670	213,920	176,169	138,419	100,668	62,918	25,167	425,865	361,985	298,105	-
Total Current Assets	1,472,365	4,487,427	7,943,874	11,470,273	15,363,476	19,424,240	21,911,416	13,643,271	25,041,829	25,587,313	28,253,545
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building / Infrastructure	318,621	286,759	254,897	223,035	191,173	159,311	127,449	95,586	63,724	31,862	725,072
Machinery & equipment	10,967,500	9,322,375	7,677,250	6,032,125	4,387,000	2,741,875	1,096,750	18,974,849	16,128,622	13,282,395	10,436,167
Furniture & fixtures	1,796,900	1,527,365	1,257,830	988,295	718,760	449,225	179,690	2,577,929	2,191,240	1,804,551	1,417,861
Office vehicles	1,292,800	1,098,880	904,960	711,040	517,120	323,200	129,280	1,854,720	1,576,512	1,298,304	1,020,096
Office equipment	1,214,000	1,031,900	849,800	667,700	485,600	303,500	121,400	2,100,339	1,785,288	1,470,237	1,155,186
Security Against Building	607,500	607,500	607,500	607,500	607,500	607,500	607,500	607,500	607,500	607,500	607,500
Total Fixed Assets	16,197,321	13,874,779	11,552,237	9,229,695	6,907,153	4,584,611	2,262,069	26,210,925	22,352,887	18,494,849	15,361,883
<i>Intangible assets</i>											
Pre-operation costs	196,009	156,807	117,605	78,403	39,202	-	-	-	-	-	-
Legal, licensing, & training costs	10,000	8,000	6,000	4,000	2,000	14,412	11,529	8,647	5,765	2,882	-
Total Intangible Assets	206,009	164,807	123,605	82,403	41,202	14,412	11,529	8,647	5,765	2,882	-
TOTAL ASSETS	17,875,695	18,527,013	19,619,716	20,782,371	22,311,830	24,023,262	24,185,013	39,862,843	47,400,480	44,085,044	43,615,428
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		85,998	101,931	120,201	141,116	165,024	192,221	211,572	232,870	256,312	279,630
Total Current Liabilities	-	85,998	101,931	120,201	141,116	165,024	192,221	211,572	232,870	256,312	279,630
<i>Shareholders' equity</i>											
Paid-up capital	17,875,695	17,875,695	17,875,695	17,875,695	17,875,695	17,875,695	17,875,695	23,131,752	23,131,752	23,131,752	23,131,752
Retained earnings		565,320	1,642,090	2,786,475	4,295,019	5,982,543	6,117,097	16,519,519	24,035,858	20,696,980	20,204,046
Total Equity	17,875,695	18,441,015	19,517,785	20,662,170	22,170,714	23,858,238	23,992,792	39,651,271	47,167,610	43,828,732	43,335,798
TOTAL CAPITAL AND LIABILITIES	17,875,695	18,527,013	19,619,716	20,782,371	22,311,830	24,023,262	24,185,013	39,862,843	47,400,480	44,085,044	43,615,428

12.3. Cash Flow Statement

Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		1,130,640	2,718,860	3,930,860	5,803,563	7,670,067	6,251,650	10,402,422	7,516,339	17,358,102	19,711,112
Add: depreciation expense		2,322,542	2,322,542	2,322,542	2,322,542	2,322,542	2,322,542	1,558,982	3,858,038	3,858,038	3,858,038
amortization of pre-operating costs		39,202	39,202	39,202	39,202	39,202	-	-	-	-	-
amortization of training costs		2,000	2,000	2,000	2,000	2,000	2,882	2,882	2,882	2,882	2,882
Dialyser Kit Inventory	(468,000)	(86,736)	(99,456)	(113,859)	(130,153)	(148,573)	(105,376)	(115,983)	(127,659)	(140,510)	1,536,305
Consumables inventory	(50,195)	(9,303)	(10,667)	(12,212)	(13,959)	(15,935)	(11,302)	(12,440)	(13,692)	(15,070)	164,776
Pre-paid building rent	(202,500)	(20,250)	(22,275)	(24,503)	(26,953)	(29,648)	(32,613)	(35,874)	(39,462)	(43,408)	477,484
Advance insurance premium	(251,670)	37,751	37,751	37,751	37,751	37,751	37,751	(400,698)	63,880	63,880	298,105
Accounts payable		85,998	15,933	18,270	20,915	23,908	27,197	19,350	21,298	23,442	23,318
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(972,365)	3,501,843	5,003,889	6,200,052	8,054,908	9,901,313	8,492,732	11,418,642	11,281,625	21,107,356	26,072,020
<i>Financing activities</i>											
Issuance of shares	17,875,695	-	-	-	-	-	-	5,256,057	-	-	-
Cash provided by / (used for) financing activities	17,875,695	-	-	-	-	-	-	5,256,057	-	-	-
<i>Investing activities</i>											
Capital expenditure	(16,403,330)	-	-	-	-	(14,412)	-	(25,507,838)	-	-	(725,072)
Acquisitions											
Cash (used for) / provided by investing activities	(16,403,330)	-	-	-	-	(14,412)	-	(25,507,838)	-	-	(725,072)
NET CASH	500,000	3,501,843	5,003,889	6,200,052	8,054,908	9,886,901	8,492,732	(8,833,140)	11,281,625	21,107,356	25,346,948

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 26 Operating Cost Assumptions

Description	Details
Building rent growth rate	10%
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation rate	10.1%
Wage growth rate	9.7%
Electricity price growth rate	9%
Office equipment price growth rate	9.6%
Office vehicle price growth rate	6.2%

13.2. Revenue Assumptions

Table 27 Revenue Assumptions

Description	Details
Service charges growth	10.1%
Initial year capacity utilization	65%
Capacity utilization growth rate	10%
Maximum capacity utilization	90%

13.3. Financial Assumptions

Table 28 Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate	15%

13.4. Debt Related Assumption

Table 29 Debt Related Assumptions

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	50:50

Discount Rate	13%
Debt Tenure	5 years
Grace Period	1 Year
Interest Rate (KIBOR+3%)	10.3%

13.5. Expense Related Assumptions

Table 30 Expense related assumptions

Description		Bases
Cost of goods sold growth rate	10.1%	
Administration benefits expense	5%	of administration expense
Communication expense	5%	of administration expense
Office vehicles running and maintenance expense	6%	of administration expense
Office expenses stationery, entertainment etc.)	4.0%	of administration expense
Promotional expense	0.5%	of revenue
Machinery & equipment insurance rate	2.0%	
Vehicles insurance rate	2.5%	of vehicle WDV

Small and Medium Enterprises Development Authority

HEAD OFFICE

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