Pre-feasibility Study

CIGARETTE LIGHTER MANUFACTURING UNIT

May 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, andrevenues 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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Document Control

Document No.	203
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Revision Date	
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2 EXECUTIVE SUMMARY

With the rising smoking trends around the world, there has been an increase in the demand for cigarette lighters. As a result, manufacturers are coming up with a wide variety of cigarette lighters ranging from flint, electric, chargeable and automobile lighters. Provide consumers with varied product options helps in increasing sales and profitability of the businesses. This study envisages the production feasibility of a simple cigarette lighter.

This "Pre-feasibility Document" provides details for setting up "Cigarette Lighter Manufacturing Unit", with a capacity of manufacturing 2.15 million units annually. The initial capacity utilization in "Year One" is estimated at 40%, producing 860 thousand units of lighters. The unit is expected to reach its maximum capacity of 90% in 6th year with an annual capacity growth rate of 10%.

The unit is proposed to be ideally located in Lahore, Karachi or Islamabad. These areas are preferred for the proposed unit due to convenient availability of raw material and skilled labor.

Establishing a "Cigarette Lighter Manufacturing Unit" does not requires a permit or license. It is proposed to set up the unit in a rented building with area of 1,510 sq. ft. (approx. 7 marla). The project, financed through 100% equity, requires a total investment of PKR 4.78 million. This includes capital investment of PKR 3.53 million and working capital of PKR 1.25 million. The Net Present Value (NPV) of project is 97.05 million with an Internal Rate of Return (IRR) of 133% and a Payback period of 1.18 years. Further, the proposed unit is expected to generate Gross Annual Revenues of PKR 21.5 million in 1st year after commissioning, Gross Profit (GP) ratio ranging from 47% to 66% and Net Profit (NP) ratio ranging from 21% to 41% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 16% (344,869 units) with breakeven revenues of PKR 8.62 million.

The proposed project may also be established using leveraged financing. At 50% debt financing at a cost of KIBOR+3%, the proposed manufacturing unit provides Net Present Value (NPV) of PKR 120 million, Internal Rate of Return (IRR) of 133% and Payback period of 1.19 years after considering the impact of debt financing. Further, the unit is expected to generate Net Profit (NP) ratio ranging from 19% to 41% during the projection period of ten years. It will achieve its estimated breakeven point at capacity of 17% with breakeven revenues of PKR 9.18 million.

The project will provide employment opportunities to 25 people including the owner. Favorable return on investment and steady growth of business is expected from the very first year of operation. Hence it may be inferred that proposed business is economically and financially viable.

The legal business status of this project is proposed as "Private Limited Company". However, an enterprise can also be a sole proprietorship or a partnership.

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 facilitate potential investors in "Cigarette Lighter Manufacturing Unit" by providing them with a general understanding of the business with the intention of supporting 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 set-up and its successful management.

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

5 BRIEF DESCRIPTION OF PROJECT & PRODUCT

A lighter as defined in ISO 9994:2005(E) is a “manually operated flame-producing device, employing a petrochemical derivative as a fuel, normally used for deliberately igniting cigarettes, cigars and pipes, and which may foreseeably be used to ignite materials such as paper, wicks, candles and lanterns”.

It consists of a metal or plastic container filled with a flammable fluid or pressurized liquid gas, a means of ignition, and some provision for conveniently extinguishing the flame.

The document provides details for setting up a simple Cigarette Lighter Manufacturing Unit. The lighter employs isobutene (liquefied hydrocarbon) as fuel. The unit requires production machinery, which mainly includes Injection Molding Machine for making plastic container, and Press Machine and Lathe Machine for making other parts of lighter. Figure 1 shows liquefied gas cigarette lighters.

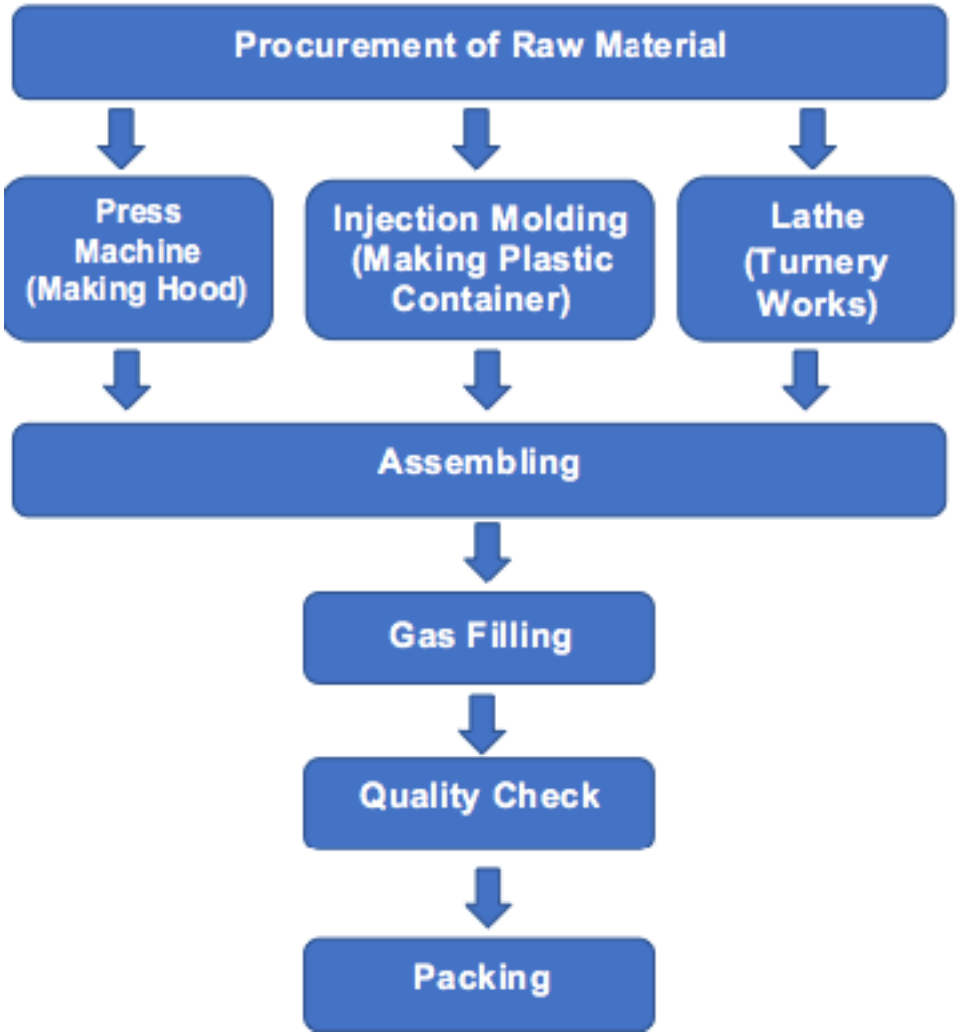
Figure 1: Gas Lighters

The proposed manufacturing unit is assumed to operate for 8 hours a day and 280 days in a year.

5.1 Production Process Flow

Figure 2 shows the production process flow:

Figure 2 Production Process Flow



The brief description of process flow is as follows:

Procurement of Raw material

The process of manufacturing of a cigarette lighter starts with the procurement of raw materials. These include:

- Brass, zinc and aluminium for making hood (part used to cover and protect the chimney), and other turnery parts (flint tube, spring tip, screws, cam, rivet, plate).
- Polypropylene granules used for making gas container through injection molding.
- Piezo igniter for ignition of spark, this part is imported from china.
- Isobutene gas to be used as fuel.

- Other parts; including rings, springs, sponges and adjusting wheel.

Different parts of a gas lighter have been shown in Figure 3.

Figure 3: Parts of Cigarette Lighter

Brass Sheet Pressing

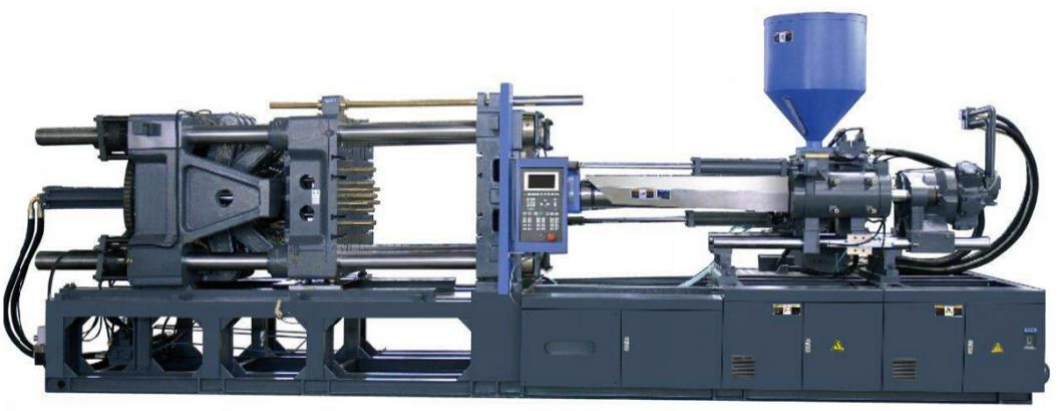
Sheet-pressing process involves cutting round metal pieces from metal sheets and shaping those into hood and plate using pressing machines. During pressing process, the brass pieces become hard. Therefore, they are made soft by passing them through soft annealing or heat-to-soft process, at a temperature between 425°C and 650°C in a furnace. The softened pieces are washed with cold water, after which they are sent again to pressing process to give them the desired shapes. Figure 4 shows a Press Machine.

Figure 4 Press Machine

Injection Molding

There are two types of containers used in gas lighters; a plastic container made by plastic injection molding machine and a brass container made by brass molding. For the proposed unit of simple lighters manufacturing, plastic containers have been suggested which can be prepared by injection molding machine. Figure 5 shows an Injection Molding Machine.

Figure 5: Injection Molding Machine

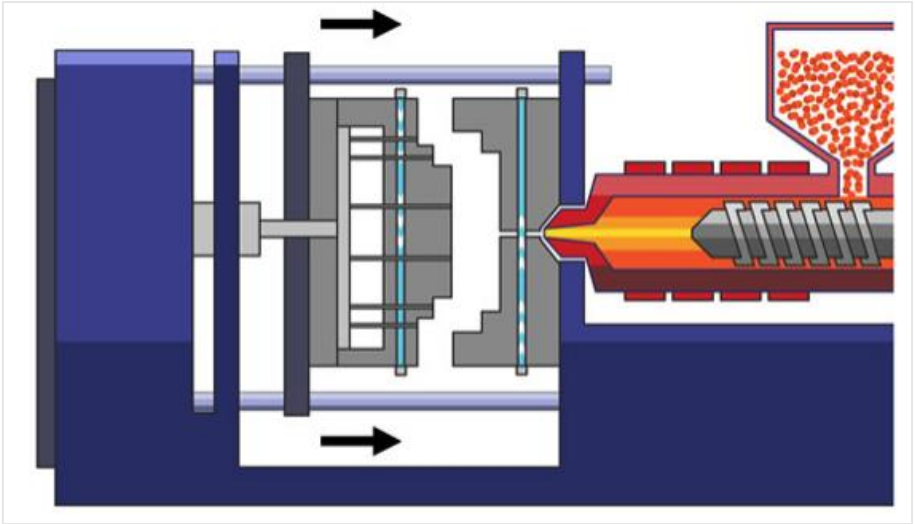


Injection molding process is given as below:

- ***Step 1***

  Polypropylene Granules are injected into the barrel through hopper to melt them. The injection molding cycle timer starts when the mold closes. Figure 6 shows closing of mold. The molten plastic and granules are also shown in hopper and feeder.

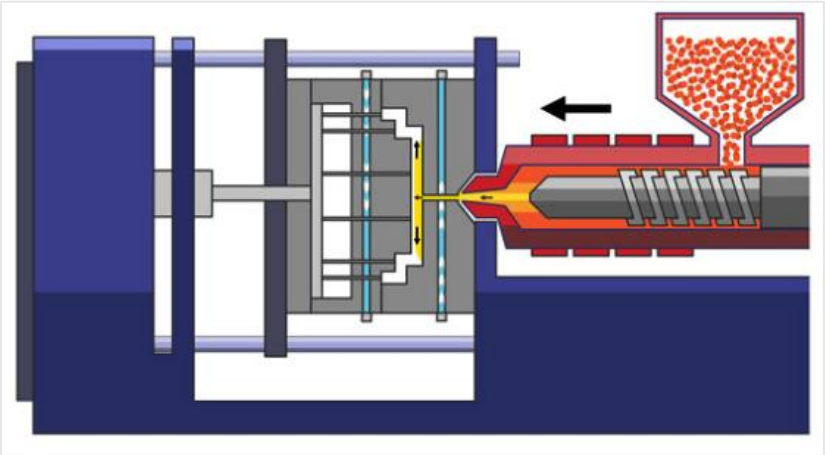
Figure 6: The Mold Closes



- ***Step 2***

  The molten plastic is then injected into the mold. As the melt enters the mold, the displaced air escapes through vents in the injection pins and along the parting line. Runner, gate and vent design are important to ensure that the mold is properly filled. Figure 7 shows step 2.

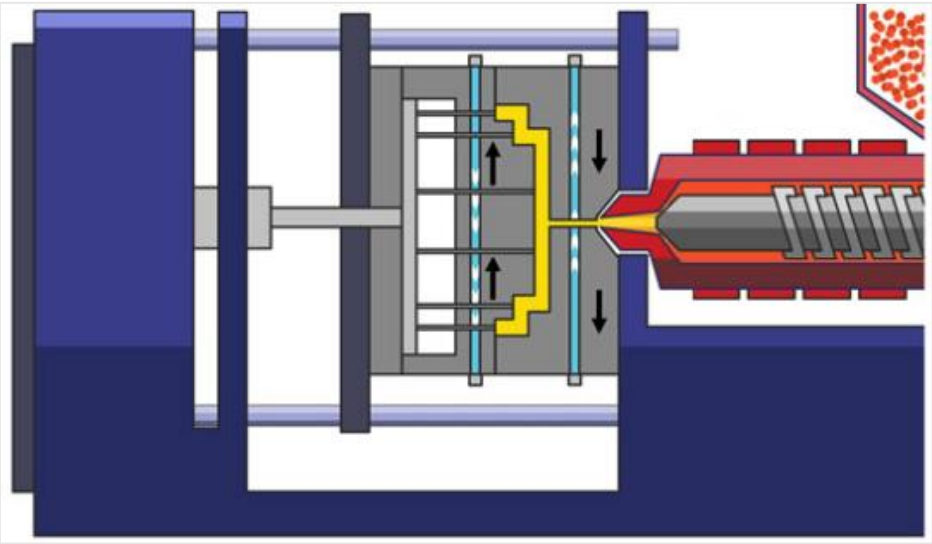
Figure 7: Injection of Melted Plastic to Mold



- ***Step 3***

  Once the mold is filled, the part is allowed to cool for the time needed to harden the material. Cooling time is dependent on the type of material and the thickness of the part. Each mold is designed with internal cooling or heating lines where water is cycled through the mold to maintain a constant temperature. Figure 8 shows step 3.

Figure 8: Cooling of design



- ***Step 3***

  Once the product is cooled the mold opens and the molded product is ejected, excess material is removed from edges and containers are moved to the assembly area.

Making of Turnery Parts

Part of manufacturing method for turnery parts is to drill holes and shape them using lathe machine. These parts include spring tip, screws, cams, rivets and plates and are used in flame adjuster, inlet valve, and burner nozzle. Zinc and Aluminum are used as a raw material for manufacturing turnery parts. These parts help in the assembling of the hood and the plastic container.

Assembling

After getting brass pressed into shapes, the filler containers manufactured through injection molding, and the turnery parts formed, the next step is to assemble them into a complete cigarette lighter. Assembling process includes container assembly and hood assembly. During this process, rings, springs, sponges, Piezo Igniter, flint stone and adjusting wheel are assembled. Figure 9 shows components of a simple Cigarette Lighter.

Figure 9: Components of a Cigarette Lighter

Gas Filling

When the assembling of a lighter is complete, lighter is fueled with Butane Gas through gas fillers. These fillers compress the gas into the lighter that forms the burning flame. Figure 10 shows a semi-automatic gas-filling machine.

Figure 10: Gas Filling Machine

Quality Check

A quality check is performed after gas filling to ensure that the produced cigarette lighter to check its performance. Pakistan Standards and Quality Control Authority (PSQCA) through PS-ISO: 9994-2018 (ICS No. 97.180) requires below quality tests "to ensure a reasonable degree of safety for normal use or reasonably foreseeable misuse of such lighters by users". Following quality assurance tests are performed.

i. Flame height measurement to ensure the standard height of flame.

ii. Spitting, sputtering and flaring tests to check leakages.

iii. Flame extinction test to determine any afterburning (i.e. continuous burning) in excess of the specified time period.

iv. Fuel compatibility test to determine whether lighter components coming into contact with the fuel recommended by the manufacturer deteriorate in any fashion or result in fuel leakage.

v. Refilling Test to ensure that no dangerous fuel leakage occurs from the refilling closure of lighters.

vi. Volumetric fuel-displacement test to determine the amount of volumetric displacement of the liquid portion of the fuel relative to the volumetric capacity of the fuel reservoir. i.e. liquid portion of fuel should not exceed 85% of the fuel reservoir capacity, to allow for some expansion within the body of the lighter in hot weather conditions.

vii. Drop Test to determine the ability of the lighter to withstand safely a drop that may occur during its use.

viii. Elevated-temperature test to determine the ability of a fuel reservoir, including closures, to withstand elevated temperatures without fuel reservoir rupture/fragmentation and without impairing subsequent operation of the lighter in a safe manner.

ix. Internal-pressure test to determine the ability of fuel reservoirs, including their closures, to withstand abnormally high internal pressure safely.

x. Cyclic-burning test to determine the ability of lighters to withstand a burning time of 20 seconds, repeated 10 times with a rest period of 5 minutes between burnings, without impairing their subsequent safe operation.

xi. Continuous-burning-time test to determine the ability of lighters to withstand continuous burning for 2 minutes without causing a hazardous condition i.e. burning of any component, valve expulsion, fragmentation of container.

The above tests can be performed using tools mentioned in Table 6.

Packing

Finished cigarette lighters are packed and labeled with safety information, warnings and instructions for final delivery.

5.2 Installed and Operational Capacities

The proposed manufacturing unit shall have installed capacity of 2,150,400 units of cigarette lighters annually. This quantity represents maximum annual capacity of proposed project. The press machine has maximum capacity to produce 5,376,000 units annually. But injection molding machine can produce 2,150,400 units at maximum capacity. The situation makes the injection molding machine as bottleneck. This is the reason that installed capacity of proposed project has been calculated as 2,150,400 units based on maximum annual production capacity of injection molding machine.

The proposed project will achieve maximum capacity utilization upto 90% of installed capacity. However, during initial year of operation, the manufacturing unit is expected to achieve 40% of its installed capacity. The unit would operate in a single shift of 8 hours per day. Based on 280 working days in a year, the unit shall produce 860,160 units in its first year of operations.

Table 1 provides information on installed and operational capacities of the proposed unit:

Table 1: Installed and Operational Capacity

Description	No of cavities	Time per Shot (sec)	No of Shots per day in 8hrs	Production per Day (Units)	Total Annual Installed Capacity (Units)	Operational Capacity @ 40%
Calculations	A	B	C= 3600[1] *8/B	D=A*C	E=D*280[2]	F=E*40%
Injection Molding	20	75	384	7,680	2,150,400	860,160 (Minimum of Injection molding and Press machine capacity)
Press Machine	20	30	960	19,200	5,376,000	

6 CRITICAL FACTORS

Certain critical factors involved during the production process of cigarette lighters are:

- Technical know-how and basic knowledge of the entrepreneur
- Induction of trained human resources for the handling of business operations; especially in production
- Provision of on job training
- Strict checks on quality standards
- Up to date knowledge of technological innovations
- Stringent supervision of the production process at every level and;
- Reduction in costs and increased productivity levels

7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Location selection is critical to the success of the project. It is important to find a location preferably in an industrial cluster where utilities, especially electricity and other infrastructure are conveniently available. Karachi, Lahore and Islamabad are most suitable cities for setting up Cigarette Lighter manufacturing unit.

[1] Seconds in an hour
[2] Total annual working days.

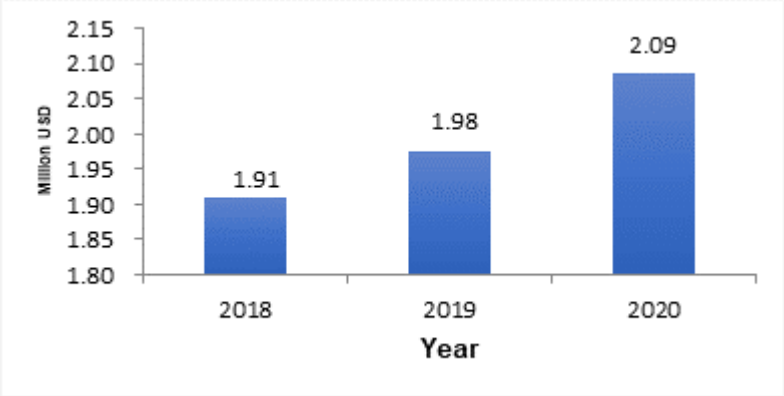
Such units may also be established in other cities where required infrastructural facilities, raw material and skilled manpower is available.

8 POTENTIAL TARGET CUSTOMERS / MARKETS

Lighters are mainly used by smokers but they can also be used for ignition for other purposes, such as gas stoves, fireworks, candles or campfire.

A few numbers of cigarette lighter manufacturers exist in Pakistan. These include ARCO Industries, Silk Road Lighters Industries and Toyo Lighters Industries as major manufacturers. To meet the local demand, cigarette lighters are also being imported. As per UN COMTRAD data, Pakistan imported cigarette lighters worth USD 1.91 million in 2018 against HS code 9613, USD 1.98 million in 2019 and USD 2.09 million in 2020 with an increasing rate of 3% and 5% in 2019 and 2020 respectively. This shows increasing demand of cigarette lighters in country. Figure 11 shows increasing trend in imports of cigarette lighters.

Figure 11: Imports of Cigarette Lighters



Rising demand in local market creates investment prospects to establish Cigarette Lighter Manufacturing Unit.

9 PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of Cigarette Lighter Manufacturing Unit. Various assumptions relevant to revenue and costs along with the results of the analysis are outlined in this section.

The projected Income Statement, Cash Flow Statement and Balance Sheet are attached as annexures of this document.

All the figures in this financial model have been calculated after carefully taking into account the relevant assumptions and target market.

9.1 Initial Project Cost

Table 2 provides the details of the project cost of for the proposed manufacturing unit.

Table 2: Initial Project Cost

Particulars	Cost (PKR)
Building Renovation Cost	334,000
Machinery & Equipment	1,880,000
Furniture & Fixture	295,000
Office Vehicle	80,800
Office Equipment	527,000
Pre-operating costs	284,536
Security against Building Rent	135,900
Total Capital Cost – (A)	**3,537,236**
Working Capital	
Equipment spare part inventory	7,834
Raw material inventory	165,706
Upfront building rent	45,300
Upfront insurance payment	28,200
Cash	1,000,000
Working Capital Requirement - (B)	**1,247,040**
Total Project Cost - (A+B)	**4,784,275**

9.1.1. Land

The proposed Cigarette Lighter Manufacturing Unit will be established in a rented building to avoid the high cost of land. Suitable location for setting up of a unit like this can be easily available on rent. Therefore, no land cost has been added to the project cost. Total space requirement for the proposed unit has been estimated at 7 marla (1,510 sq. ft.). This space requirement has been calculated on the basis of proposed manpower, required machinery and equipment, raw material etc. Breakup of land is given in Table 3.

Table 3: Breakup of Land

Particulars	Area (Sq. Ft.)
Offices	250
Factory	768
Store	80
Kitchen	54
Washrooms	48
Pavement/driveway	110
Parking	200
Total	**1510**

9.1.2. Building and Renovation Cost

There will be no cost of building since the unit will be started in the rented premises. However, there will be a renovation cost required to make the building ready to use for the business. The proposed unit requires estimated electricity load of 10 KW for which three-phase electricity connection under Industrial Supply Tariff (B2) will be required. Cost of such electricity connection has not been considered in this document since electricity connection is generally available in such buildings, which are offered for rent. Building rent of PKR 45,300 per month has been included in the operating cost. Detail of building renovation cost is given in Table 4.

Table 4: Building Renovation Cost

Cost Item	UOM	Total Liter / Area / Number	Cost/Unit/ Sq. Feet	Total Cost
Paint Cost	Liter	120	500	60,000
Labor Cost	Sq. Feet	12,000	8	96,000
Wall Racks	Units	10	15,000	150,000
Curtains	Units	4	5,000	20,000
Blinds	Units	4	2,000	8,000
TOTAL (PKR)				**334,000**

9.1.3. Machinery and Equipment Requirement

Details of machinery and equipment required for the project are given in Table 5.

Table 5: Machinery and Equipment Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Injection Molding Machine (Clamping Force 90 Ton, 50 seconds per shot)	1	1,000,000	1,000,000
Pressing Machine (5 Ton)	1	100,000	100,000
Gas Fillers (10 Nozzles)	2	200,000	400,000
Mechanical Tool Kit	2	20,000	40,000
Electrical Tool Kit	2	20,000	40,000
Lathe Machine (6ft 1.5 HP)	1	300,000	300,000
Total Cost			**1,880,000**

Table 6 shows a general list of mechanical and electrical tool kits.

Table 6: Tool Kits

Mechanical Tool Kit	Electrical Tool Kit
Wrenches (Set)	Wire Strippers
Screwdrivers	Nut drivers
Pliers	Screw drivers
Hammer	Pliers
Pressure Gauge	Tweezers
Scissors	Tape Measure
Electrical Tape	Hammer
Hex Wrench (Set)	Level
Thermometer	Stop Watch
Gloves	Utility Knife
Terminal Crimper	Nose Pliers
Stop Watch	Tool Pouch

9.1.4. Furniture and Fixtures Requirement

Details of the furniture and fixture required for the project are given in Table 7.

Table 7: Furniture and Fixtures Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Office Tables	3	25,000	75,000
Executive Tables	1	30,000	30,000
Executive Chairs	1	20,000	20,000
Sofa Sets	1	35,000	35,000
Office Chairs	12	10,000	120,000
Guests Table	1	15,000	15,000
Total			**295,000**

9.1.5. Office Vehicle Requirement

Details of vehicle required for the project is given in the Table 8.

Table 8: Office Vehicle Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Motorcycle	1	80,000	80,000
Registration Charges		1%	800
Total			**80,800**

9.1.6. Office Equipment

Detail of office equipment is given in Table 9.

Table 9: Office Equipment

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Air Conditioners	2	90,000	180,000
Water Dispenser / Water Cooler	1	20,000	20,000
Laptop Computers	2	80,000	160,000
Printer	1	40,000	40,000

Desktop Computer	1	30,000	30,000
Security Cameras (2MP)	8	2,000	16,000
Digital Video Recorder (DVR)	1	12,000	12,000
LED TV	1	40,000	40,000
Ceiling Fans	5	5,000	25,000
Exhaust Fans	2	2,000	4,000
Total			**527,000**

9.1.7. Pre-Operating Cost Requirement

Pre-operating charges include administrative expenses and utilities connection and running charges incurred before commissioning of the project. Details are given in Table 10.

Table 10: Pre-Operating Expenses

Cost Item	Cost (PKR)
Owner	220,000
Telephone Connection Charges	5,000
Electricity expenses[3]	59,536
Total	**284,536**

9.1.8. Security against Building

Table 11 provides details of security against rented building.

Table 11: Security against Building Details

Cost item	Unit	No.	Unit Cost (PKR)	Cost (PKR)
Security against Building Rent	Months	3	45,300	135,900
Total Cost (PKR)				**135,900**

[3] Electricity expenses have been calculated for one month on the basis of total charges for 1st year (i.e. total expenses divided by 12).

9.1.9. Working Capital Requirement

Working capital is the amount required to run the entity's day-to-day operations. Details are given in Table 12.

Table 12: Working Capital Requirements

Description	Amount (PKR)
Equipment spare part inventory	7,834
Raw material inventory	165,706
Upfront building rent	45,300
Upfront insurance payment	28,200
Cash	1,000,000
Total	**1,247,040**

9.2 Breakeven Analysis

Calculation of breakeven analysis is provided in Table 13.

Table 13: Breakeven Analysis

Description	Amount First Year (PKR)	Ratios
Sales	21,504,000	100%
Variable Cost	11,005,751	51%
Contribution	10,498,249	49%
Fixed Cost	4,209,127	20%
Contribution Margin		10%
Breakeven Revenue (PKR)		8,621,730
Breakeven Production (units)		344,869
Breakeven as % of Installed Capacity		16%

9.3 Revenue Generation

Based on 40% capacity utilization of the unit, sales revenue during the first year of operations is presented in Table 14:

Table 14: Revenue Generation

Product	Production (Units)	Sale Price/ Unit (PKR)	Revenue (PKR)
Cigarette Lighters	860,160	25	21,504,000

9.4 Variable Cost Estimate

Variable cost of the project has been provided in the Table 15.

Table 15: Variable Cost Estimate

Description of Costs	Amount (PKR)
Material Cost	3,976,950
Direct Labor	5,268,000
Machinery Maintenance	94,000
Utilities	714,430
Communications Expense (phone, fax, mail, internet, etc.)	294,000
Office Vehicles Running Expense	163,611
Office expenses (stationery, entertainment, janitorial services, etc.)	441,000
Bad debt Expense	53,760
Total	**11,005,751**

Per unit cost of goods sold related to major components used in manufacturing and total cost of goods sold based on estimated annual sales of 1,290,240 units is provided in Table 16.

Table 16: Material Cost

Material	Unit of Measurement	Cost/ KG (PKR)	Consumption /Unit (g)	Cost/ Finished Good (PKR)
Brass	KG	621	0.50	0.31
Zinc	KG	476	0.50	0.24
Aluminium	KG	320	0.50	0.16
Polypropylene Granules	KG	350	6.00	2.10
Butane Gas	KG	70	4.50	0.32
Total (A)			**12.0**	**3.12**
Material	**Unit of Measurement**	**Cost/ Unit (PKR)**	**Consumption/ Unit**	**Cost/ Finished Good (PKR)**
Electronic Piezo Igniter (B)	Units	1.5	1.0	1.50
Total Cost/ Unit (A+B)				**4.62**
Units Sold				860,160
Material Cost				**3,976,950**

9.5 Fixed Cost Estimate

Table 17 provides the details regarding estimated fixed cost of the project.

Table 17: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Administration expense	2,940,000
Administration benefits expense	82,080

Building rental expense	543,600
Promotional expense	107,520
Insurance expense	28,200
Depreciation expense	450,820
Amortization of pre-operating costs	56,907
Total	**4,209,127**

9.6 Financial Feasibility Analysis

The financial feasibility analysis given in Table 18 provides the information regarding projected IRR, NPV and payback period of the study.

Table 18: Financial Feasibility Analysis

Description	Values
IRR	133%
NPV (PKR)	97,047,829
Payback Period (years)	1.18
Projection Years	10
Discount rate used for NPV	15%

9.7 Financial Feasibility Analysis at 50% Debt

The financial feasibility analysis given in Table 19 provides the information regarding projected IRR, NPV and payback period of the study as per (50:50) Debt: Equity Model.

Table 19: Financial Feasibility Analysis at 50% Debt

Description	Equity	Project
IRR	194%	133%
NPV (PKR)	97,400,948	120,050,941
Payback Period (years)	-	1.19
Discount rate used for NPV	15%	12%

9.8 Human Resource Requirement

Proposed manufacturing unit shall require the workforce at a monthly salary cost as projected in Table 20.

Table 20: Human Resource Requirement

Post Description	No. of Employee (s)	Monthly Salary (PKR)	Total Monthly Cost (PKR)	Total Annual Cost (PKR)
Owner	1	100,000	100,000	1,200,000
Injection Molding Machine Operator	1	30,000	30,000	360,000
Machine Operator's Helper	1	20,000	20,000	240,000
Press Machine Operator	1	30,000	30,000	360,000
Machine Operator's Helper	1	20,000	20,000	240,000
Lathe Machine Operator	1	30,000	30,000	360,000
Assembling Staff	6	25,000	150,000	1,800,000
Gas Fillers	2	22,000	44,000	528,000
Quality Controller	1	35,000	35,000	420,000
Packing Staff	4	20,000	80,000	960,000
Procurement cum Inventory Officer	1	30,000	30,000	360,000
Accounts Officer	1	35,000	35,000	420,000
Security Guard	2	20,000	40,000	480,000
Office Boy	2	20,000	40,000	480,000
Total	**25**		**684,000**	**8,208,000**

10 CONTACT DETAILS

Contact details of suppliers of machinery and equipment are provided in Table 21.

Table 21: Contact Details of Suppliers

Cost Item		Contact Number	E-mail	Web Address
Injection Molding Machine	Borche Injection Molding Machinery Pakistan	924235120190 9242352156 28	info@borche.com.pk	http://borche.com.pk/
Injection Molding	Nasir Plastic Molding	0423760999 9 0320507410 6	-	-
Pressing Machine (5 Ton)	Mughal Power Press	0300643075 0	-	-
Gas Fillers (10 Nozzles)	OKCHEM	8657128103 240	info@okchem.com	https://www.okchem.com
Mechanical Tool Kit	Total Tools Co Limited	924237653245 9242376361 85	Mac_info@hotmail.com	http://www.totaltools.com.pk/
Electrical Tool Kit	Total Tools Co Limited	924237653245 9242376361 85	Mac_info@hotmail.com	http://www.totaltools.com.pk/
Lathe Machine (6ft 1.5 HP)	Hafiz Lathe Machines	0322 9945515	www.hlmpk1@gmail.com	https://www.hlmpk.net/

11 USEFUL WEB LINKS

Table 22: Useful Web Links

Organization Name	Web Address
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries and Production	www.moip.gov.pk
Government of Punjab	www.punjab.gov.pk
Trade Development Authority of Pakistan	www.tdap.gov.pk
Security and Exchange Commission of Pakistan	www.secp.gov.pk
State Bank of Pakistan	www.sbp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
Technical Education and Vocational Training Authority (TEVTA)	www.tevta.org
Punjab Vocational Training Council (PVTC)	www.pvtc.gop.pk
Punjab Small Industries Corporation (PSIC)	www.psic.gop.pk

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	21,504,000	29,917,440	39,957,733	51,885,116	65,997,868	82,637,580	91,975,627	102,368,872	113,936,555	126,811,386
Cost of sales										
Material Cost	3,976,950	5,532,931	7,389,783	9,595,633	12,205,646	15,282,994	17,009,972	18,932,099	21,071,426	23,452,498
Direct Labor	5,268,000	9,579,744	10,279,065	11,029,437	11,834,586	12,698,511	13,625,502	14,620,164	15,687,436	16,832,618
Machinery Maintenance	94,000	100,580	107,621	115,154	123,215	131,840	141,069	150,943	161,510	172,815
Electricity Cost	608,452	773,501	964,048	1,183,302	1,434,841	1,722,650	1,861,044	2,011,618	2,175,441	2,353,682
Total cost of sales	9,947,402	15,986,756	18,740,517	21,923,527	25,598,288	29,835,994	32,637,587	35,714,824	39,095,813	42,811,613
Gross Profit	11,556,598	13,930,684	21,217,216	29,961,589	40,399,580	52,801,586	59,338,039	66,654,049	74,840,742	83,999,773
General administration & selling expenses										
Administration expense	2,940,000	3,154,620	3,384,907	3,632,005	3,897,142	4,181,633	4,486,892	4,814,436	5,165,889	5,542,999
Administration benefits expense	82,080	127,344	136,640	146,614	157,317	168,801	181,124	194,346	208,533	223,756
Building rental expense	543,600	597,960	657,756	723,532	795,885	875,473	963,021	1,059,323	1,165,255	1,281,780
Utilities	105,978	134,726	167,915	206,104	249,916	300,046	324,151	350,377	378,911	409,957
Communications expense (phone, fax, mail, internet, etc.)	294,000	315,462	338,491	363,201	389,714	418,163	448,689	481,444	516,589	554,300
Office vehicles running expense	163,611	175,555	188,370	202,121	216,876	232,708	249,696	267,923	287,482	308,468
Office expenses (stationery, entertainment, janitorial services, etc.)	441,000	473,193	507,736	544,801	584,571	627,245	673,034	722,165	774,883	831,450
Promotional expense	107,520	149,587	199,789	259,426	329,989	413,188	459,878	511,844	569,683	634,057
Insurance expense	28,200	23,970	19,740	15,510	11,280	7,050	2,820	48,330	41,080	33,831
Depreciation expense	450,820	450,820	450,820	450,820	450,820	450,820	311,680	752,704	752,704	752,704
Bad debt expense	53,760	74,794	99,894	129,713	164,995	206,594	229,939	255,922	284,841	317,028
Subtotal	5,267,476	5,734,937	6,208,965	6,730,753	7,305,413	7,881,722	8,330,924	9,458,814	10,145,851	10,890,330
Operating Income	6,289,122	8,195,747	15,008,252	23,230,836	33,094,167	44,919,864	51,007,116	57,195,235	64,694,891	73,109,442
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	470,000	-	-	
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	131,750	-	-	
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	20,200	-	-	
Earnings Before Interest & Taxes	6,289,122	8,195,747	15,008,252	23,230,836	33,094,167	44,919,864	51,629,066	57,195,235	64,694,891	73,109,442
Subtotal	-	-	-	-	-	-	-	-	-	-
Earnings Before Tax	6,289,122	8,195,747	15,008,252	23,230,836	33,094,167	44,919,864	51,629,066	57,195,235	64,694,891	73,109,442
Tax	1,818,283	2,371,204	4,346,831	6,731,380	9,728,046	13,157,498	15,062,816	16,571,308	18,746,208	21,186,428
NET PROFIT/(LOSS) AFTER TAX	**4,470,839**	**5,824,542**	**10,661,421**	**16,499,456**	**23,366,121**	**31,762,366**	**36,566,250**	**40,623,927**	**45,948,683**	**51,923,014**

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											
Current assets											
Cash & Bank	1,000,000	2,426,631	4,481,022	7,652,866	11,949,090	17,228,336	23,700,072	24,060,208	29,018,260	34,034,828	41,385,906
Accounts receivable		1,767,452	2,113,210	2,871,582	3,774,364	4,844,506	6,108,306	7,175,885	7,986,760	8,889,264	9,893,751
Equipment spare part inventory	7,833	9,052	10,461	12,088	13,969	16,143	18,655	21,558	24,912	28,788	-
Raw material inventory	165,706	246,677	352,523	489,794	666,630	893,133	1,063,641	1,266,701	1,508,526	1,796,519	-
Pre-paid building rent	45,300	49,830	54,813	60,294	66,324	72,956	80,252	88,277	97,105	106,815	-
Pre-paid insurance	28,200	23,970	19,740	15,510	11,280	7,050	2,820	48,330	41,080	33,831	-
Total Current Assets	1,247,040	4,523,612	7,031,769	11,102,135	16,481,656	23,062,124	30,973,746	32,660,959	38,676,644	44,890,045	51,279,657
Fixed assets											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	334,000	300,600	267,200	233,800	200,400	167,000	133,600	100,200	66,800	33,400	-
Machinery & equipment	1,880,000	1,598,000	1,316,000	1,034,000	752,000	470,000	188,000	3,221,990	2,738,691	2,255,393	1,772,094
Furniture & fixtures	295,000	250,750	206,500	162,250	118,000	73,750	29,500	505,578	429,741	353,905	278,068
Office vehicles	80,800	68,680	56,560	44,440	32,320	20,200	8,080	164,606	139,915	115,224	90,533
Office equipment	527,000	447,950	368,900	289,850	210,800	131,750	52,700	903,185	767,708	632,230	496,752
Security against building	135,900	135,900	135,900	135,900	135,900	135,900	135,900	135,900	135,900	135,900	135,900
Total Fixed Assets	3,252,700	2,801,880	2,351,060	1,900,240	1,449,420	998,600	547,780	5,031,459	4,278,755	3,526,051	2,773,347
Intangible assets											
Pre-operation costs	284,536	227,629	170,722	113,814	56,907	-	-	-	-	-	-
Total Intangible Assets	284,536	227,629	170,722	113,814	56,907	-	-	-	-	-	-
TOTAL ASSETS	**4,784,275**	**7,553,121**	**9,553,550**	**13,116,190**	**17,987,984**	**24,060,724**	**31,521,526**	**37,692,417**	**42,955,399**	**48,416,096**	**54,053,004**
Liabilities & Shareholders' Equity											
Current liabilities											
Accounts payable		533,426	739,294	986,213	1,281,130	1,632,099	2,033,893	2,273,338	2,541,758	2,842,797	2,912,710
Total Current Liabilities	-	533,426	739,294	986,213	1,281,130	1,632,099	2,033,893	2,273,338	2,541,758	2,842,797	2,912,710
Other liabilities											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
Shareholders' equity											
Paid-up capital	4,784,275	4,784,275	4,784,275	4,784,275	4,784,275	4,784,275	4,784,275	4,784,275	4,784,275	4,784,275	4,784,275
Retained earnings		2,235,419	4,029,981	7,345,701	11,922,578	17,644,350	24,703,358	30,634,804	35,629,365	40,789,024	46,356,019
Total Equity	4,784,275	7,019,695	8,814,256	12,129,976	16,706,854	22,428,625	29,487,633	35,419,079	40,413,641	45,573,299	51,140,295
TOTAL CAPITAL AND LIABILITIES	**4,784,275**	**7,553,121**	**9,553,550**	**13,116,190**	**17,987,984**	**24,060,724**	**31,521,526**	**37,692,417**	**42,955,399**	**48,416,096**	**54,053,004**

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
Operating activities											
Net profit		4,470,839	5,824,542	10,661,421	16,499,456	23,366,121	31,762,366	36,566,250	40,623,927	45,948,683	51,923,014
Add: depreciation expense		450,820	450,820	450,820	450,820	450,820	450,820	311,680	752,704	752,704	752,704
amortization of pre-operating costs		56,907	56,907	56,907	56,907	56,907	-	-	-	-	-
Accounts receivable		(1,767,452)	(345,758)	(758,373)	(902,781)	(1,070,143)	(1,263,800)	(1,067,579)	(810,875)	(902,504)	(1,004,487)
Equipment inventory	(7,833)	(1,219)	(1,409)	(1,628)	(1,881)	(2,174)	(2,512)	(2,903)	(3,354)	(3,876)	28,788
Raw material inventory	(165,706)	(80,970)	(105,847)	(137,271)	(176,835)	(226,503)	(170,508)	(203,060)	(241,826)	(287,993)	1,796,519
Pre-paid building rent	(45,300)	(4,530)	(4,983)	(5,481)	(6,029)	(6,632)	(7,296)	(8,025)	(8,828)	(9,710)	106,815
Advance insurance premium	(28,200)	4,230	4,230	4,230	4,230	4,230	4,230	(45,510)	7,249	7,249	33,831
Accounts payable		533,426	205,868	246,919	294,916	350,969	401,794	239,446	268,420	301,039	69,913
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(247,040)	3,662,051	6,084,371	10,517,545	16,218,803	22,923,596	31,175,094	35,790,299	40,587,417	45,805,592	53,707,097
Financing activities											
Issuance of shares	4,784,275	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activities	4,784,275	-	-	-	-	-	-	-	-	-	-
Investing activities											
Capital expenditure	(3,537,236)	-	-	-	-	-	-	(4,795,359)	-	-	-
Acquisitions											
Cash (used for) / provided by investing activities	(3,537,236)	-	-	-	-	-	-	(4,795,359)	-	-	-
NET CASH	1,000,000	3,662,051	6,084,371	10,517,545	16,218,803	22,923,596	31,175,094	30,994,940	40,587,417	45,805,592	53,707,097

13 KEY ASSUMPTIONS

13.1 Cost of Sales Assumptions

Table 23: Cost of Sales Assumptions

Description	Details
Machinery Maintenance	5% of Machinery Cost
Cost of Sales Growth Rate	11.3%

13.2 Operating Cost Assumptions

Table 24: Operating Cost Assumptions

Description	Details
Administration benefits expense	1 % of administration expense
Communication expense	10 % of administration expense
Office vehicles running expense	5 % of administration expense, no of vehicles
Office expenses (stationery, entertainment, janitorial services, etc.)	15 % of administration expense
Promotional expense	0.5 % of revenue
Machinery & equipment insurance rate	1.5 % of machinery & equipment cost
Bad debt expense	0.25 % of revenue
Building rent growth rate	10%
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation rate	11.3%
Wage growth rate	7.3%
Electricity price growth rate	8.8%
Office equipment price growth rate	8.0%

Office vehicle price growth rate	10.7%
Operating costs growth rate	7%

13.3 Revenue Assumptions

Table 25: Revenue Assumptions

Description	Details
Sale price growth rate	8.3%
Initial year capacity utilization	40%
Capacity growth rate	10%
Maximum capacity utilization	90%

13.4 Financial Assumptions

Table 26: Financial Assumptions

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

13.5 Cash Flow Assumptions

Table 27: Cash Flow Assumptions

Description	Details
Accounts receivable cycle (in days)	30
Accounts payable cycle (in days)	45

Small and Medium Enterprises Development Authority

HEAD OFFICE

4th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road, Lahore
Tel: (92 42) 111 111 456, Fax: (92 42) 36304926-7

www.smeda.org.pk, **helpdesk@smeda.org.pk**

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
3rd Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road Lahore, Tel: (042) 111-111-456 Fax: (042) 36304926-7 helpdesk.punjab@smeda.org.pk	5TH Floor, Bahria Complex II, M.T. Khan Road, Karachi. Tel: (021) 111-111-456 Fax: (021) 5610572 helpdesk-khi@smeda.org.pk	Ground Floor State Life Building The Mall, Peshawar. Tel: (091) 9213046-47 Fax: (091) 286908 helpdesk-pew@smeda.org.pk	Bungalow No. 15-A Chaman Housing Scheme Airport Road, Quetta. Tel: (081) 831623, 831702 Fax: (081) 831922 helpdesk-qta@smeda.org.pk