



Pre-feasibility Study

MANUFACTURING UNIT FOR WOODEN DOORS

August 2022

“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 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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2 EXECUTIVE SUMMARY

Wooden doors are made from natural and durable material (wood) that can withstand harsh environmental conditions. The natural composition of wood also enables wooden doors to stay unaffected by temperature changes. Wooden doors add value to the buildings and provide an elegant look to interior and exterior of a building.

Wooden doors are durable, long lasting and rust-free option to have in houses, offices apartments, hotels, schools, etc. For the past many years, there has been a significant growth in newly built houses, apartments, hotels due to low markup housing loans provided by financial institutions for construction of new houses, which along with many other construction-related industries, has also provided a boom to the wooden doors industry.

There are different types of woods available in the market to manufacture wooden doors. Common woods include Deodar (Diyar), Ash wood, Yellow pine, Poplar, Kail wood, Oak, Partal, Mahogany and Sheesham wood.

There are two types of doors which have a higher market demand; solid wooden doors and semi-solid wooden doors. In semi solid doors, the core is made of MDF (Medium Density Fiberboard)¹ and wood is used for making the main frame of door. Solid doors are fully made from wood and are more reliable and long lasting.

Large cities like, Lahore, Karachi, Islamabad, Peshawar, Rawalpindi, Quetta, Faisalabad, Sialkot, Hyderabad, Muzaffarabad, Gujranwala, Multan, Sialkot, Mardan, Sukkur, etc. are more suitable for setting up the proposed business due to construction of houses in the large number of existing and new housing societies. The numbers of offices in such larger cities are also higher which creates a market for wooden doors. Furthermore, majority of the residential buildings, housing societies, hostels, hotels, schools, hospitals, etc. also exist in such larger cities in higher numbers.

The proposed manufacturing unit has a maximum annual capacity of manufacturing 3,000 doors which includes 40% MDF sheet doors, 25% Kail wood doors, 17% Yellow Pine wood doors, 12% Ash wood doors and 6% Deodar wood doors. It translates into 750 Kail wood doors (300 bedroom doors, 150 main entry doors, 300 washroom doors), 510 Yellow Pine wood doors (180 bedroom doors, 150 main entry doors, 180 washroom doors), 360 Ash wood doors (120 bedroom doors, 120 main entry doors, 120 washroom doors), 180 Deodar wood doors (30 bedroom doors, 150 main entry doors), and 1200 MDF sheet doors (600 bedroom doors, and 600 washroom doors).

Initially, the project is estimated to manufacture wooden doors at 60% of the total production capacity, which is equal to 1,800 doors. It includes 450 Kail wood doors (180 bedroom doors, 90 main entry doors, 180 washroom doors), 306 Yellow Pine wood doors (108 bedroom doors, 90 main entry doors, 180 washroom doors), 216 Ash

¹ Medium-density fibreboard (MDF) is an engineered wood product made by breaking down hardwood or softwood residuals into wood fibres, often in a defibrator, combining it with wax and a resin binder, and forming it into panels by applying high temperature and pressure.

wood doors (72 bedroom doors, 72 main entry doors, 72 washroom doors), 108 Deodar wood doors (18 bedroom doors, 90 main entry doors), and 720 MDF sheet doors (360 bedroom doors, and 360 washroom doors).

The production capacity utilization is assumed to increase at a rate of 5% per annum with a maximum capacity of 95% achieved in Year 8. High return on investment and steady growth of business is expected with the entrepreneur having some prior experience or education in the related field of business.

The proposed project will be set up in a rented building having an area of 3,000 sq. ft. (13.3 Marla). The project requires a total investment of PKR 10.18 million. This includes capital investment of PKR 6.31 million and working capital of PKR 3.87 million. The project will be established using 100% equity financing. The Net Present Value (NPV) of project is PKR 25.70 million with an Internal Rate of Return (IRR) of 60% and a Payback period of 2.43 years. Further, the proposed project is expected to generate Gross Annual Revenues of PKR 47.98 million in 1st year of operations, Gross Profit (GP) ratio ranging from 22% to 33% and Net Profit (NP) ratio ranging from 7% to 17% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 36% (1,076 doors) with gross revenue of PKR 28.69 million in a year.

The proposed project may also be established using leveraged financing. At 50% financing at a cost of KIBOR+3%, the proposed manufacturing unit of wooden doors provides Net Present Value (NPV) of PKR 31.36 million, Internal Rate of Return (IRR) of 59% and Payback period of 2.48 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 6% to 17% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 38% (1,150 doors) with breakeven revenue of PKR 30.67 million.

The proposed project will provide employment opportunities to 14 people. It is evident from the above financial figures that the project for manufacturing of wooden doors offers reasonable profitability and is economically and financially viable. The legal business status of this project is proposed as "Sole Proprietorship".

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 the 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 establishing a business of "Manufacturing unit for Wooden Doors". The document provides a general understanding of the business to facilitate 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 & PRODUCTS

The proposed project provides information to establish a wooden door manufacturing unit. Door is a very important component of any building. Wooden doors carry an elegance and class that other doors do not. Along with elegance, wooden doors are also very durable. These doors offer good insulation properties against heat and cold entering the buildings.

There are two main types of wooden doors:

- Solid wooden doors
- Semi solid wooden doors

Solid wooden doors are made of 100% natural wood, except for the supporting metallic hardware, like hinges, door handles and door locks. Solid wooden doors are heavy, durable, and expensive. Figure 1 shows solid wooden doors.

Figure 1: Solid Wooden Doors



Semi-solid wooden doors are more commonly used as compared to traditional solid wooden doors due to their low cost. Instead of being made from natural wood, semi solid doors are made from fiberboard sheets that are fitted into wooden frame using glue and nails. Semi solid wooden doors are available at considerably lower price compared to solid wooden doors. Figure 2 shows semi solid wooden doors.

Figure 2: Semi Solid Wooden Doors

Wooden doors are always in demand due to an ongoing increase in construction of houses, commercial buildings, hotels, apartments, offices, schools, hospitals, etc. Different types of woods are available in market to manufacture wooden doors. Commonly used woods are Deodar (Diyar), Ash wood, Kail wood, Yellow pine, Poplar, Oak, Partal, etc. Deodar, Ashwood, Kail wood and Yellow pine wood are more commonly used and thus have been considered as the main raw materials in the proposed project for manufacturing solid wooden doors. However, only Kail wood is used for manufacturing frames of semi solid wooden doors. Figure 3 shows different types of wood used for making doors.

Figure 3: Types of Wood

The proposed business will produce solid wooden entry doors, bedroom doors and washroom doors and semi solid wooden bedroom doors and washroom doors on the basis of orders received from customers. The standard sizes of house entry door, bedroom door and washroom door are shown in Table 1.

Table 1: Standard Door Sizes

Particular	Length (Feet)	Width (Feet)	Depth (Feet)	Total Area (Square Feet)	Total Volume (Cubic Feet)
Bedroom Door	7	3.25	0.125	22.75	2.844
House Entry Door	8	5	0.167	40.00	6.667
Washroom Door	6.5	2.25	0.125	14.63	1.828

5.1 Machinery and Equipment

There are a number of machines, which are used for manufacturing wooden doors. The machineries and equipment used in the proposed project are described below.

Vertical Band Saw Machine:

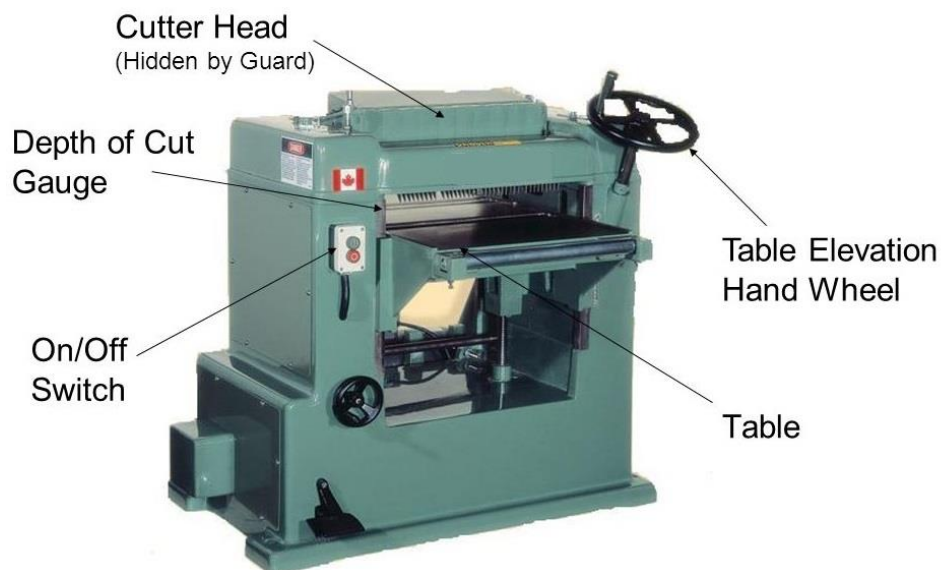
Vertical band saw machine is used to cut the wooden planks into required shapes. A vertical band saw machine consists of continuous band of metal blade having teeth on one side that rotates between wheels mounted above and below the work table to cut the wood. Vertical band saw machine is powered by an electric motor that rotates the wheels with the help of belt which then moves blade continuously at high speed. The power consumption required for electric motor of this machine is 7,500 W. Figure 4 shows vertical band saw machine.

Figure 4: Vertical Band Saw Machine

Wood Thickness Planer Machine

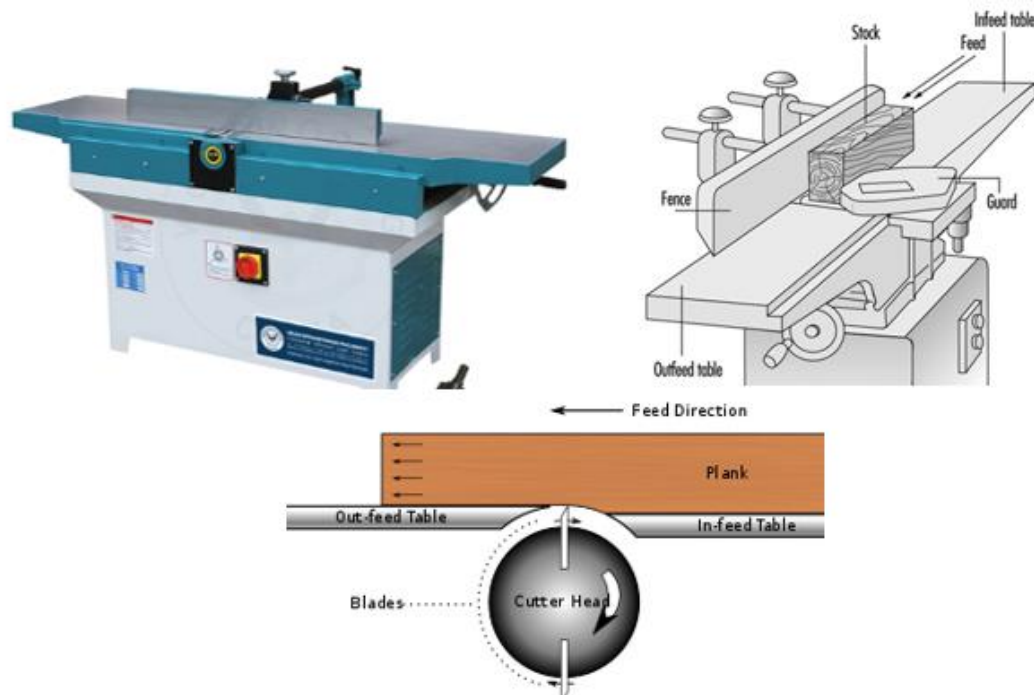
Wood thickness planer is used to trim the wooden plank to achieve the required thickness throughout its length. Wood planer machine consists of a table, which is adjustable relative to the cutter head to control thickness level. The height of the table is adjusted using table elevator hand wheel. The wooden plank is placed on the table of the machine. The feeder roller grips and passes the plank through the rotating cutter head of the machine. The rotating cutter head contains the cutting knives which removes wood until the required thickness is achieved. The power consumption of this machine is 7,500W. Figure 5 shows wood planer machine.

Figure 5: Wood Thickness Planer Machine

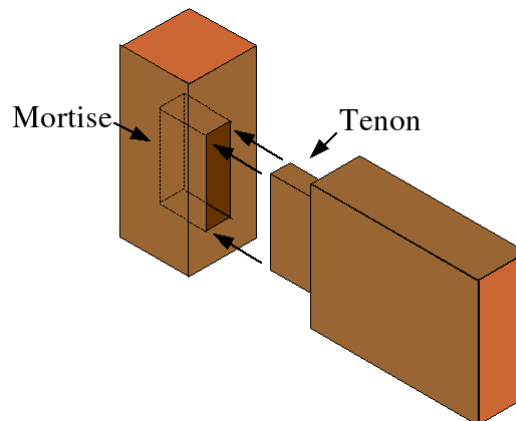


Wood Surface Jointer Planer Machine

A wood surface jointer planer machine is used to remove a layer of wood from a plank to flatten the surface. It also straightens and smoothen the surface of the wooden plank from both sides. Surface planer machine consists of in-feed and out-feed table and the cutter head located between both the tables. The blades are attached with the cutter head which rotates to cut the wood. The out-feed table is set at the same height of cutter head and the in-feed table is set lower than the cutter head. The work piece is placed on the in-feed table and manually passed over the cutter head toward the out-feed table to remove the required layer of wood. The power consumption of this machine is 2,200W. Figure 6 shows wood surface jointer planer machine.

Figure 6: Wood Surface Jointer Planer Machine**Wood Mortiser Machine**

Different pieces of wood are joined by making mortises and tenons in the two or more pieces of wood to be joined. Mortise is the square or rectangular shaped hole (Chool)² in which tenon (Sira)³ can be inserted. Figure 7 shows mortise and tenon made in the wood for joining pieces.

Figure 7: Mortise and Tenon

A wood mortiser machine is used to make mortise and tenon. The machine works by fitting a wooden plank on the work table of the machine under a rotating chisel. One penetration makes a square hole and repeated penetrations makes a rectangular hole.

² A hole or recess cut into a part, which is designed to receive a corresponding projection (a Tenon) on another part to join or lock the parts together.

³ A projecting piece of wood made for insertion into a mortise in another piece.

Power consumption of wood mortiser machine is 2,200W. Figure 8 shows wood mortiser machine.

Figure 8: Wood Mortiser Machine



Wood Spindle Moulder

Wood spindle moulder is a mechanical wood working machine which helps in cutting and shaping wood in different ways. It is used for performing essential tasks such as grooving⁴ and tenoning process⁵ on the work piece. It also creates decorative pattern at edges and surfaces of wood. These machines have a spindle which is set up at 45-degree angle which helps the users to achieve flawless precision when reshaping the pieces of wood. The power consumption of this machine is 4,000W. Figure 9 shows wood spindle moulder.

Figure 9: Wood Spindle Moulder



⁴ A groove is a deep line cut into a surface.

⁵ A tenon is a projection on the end of a timber for insertion into a mortise.

Wood Carving CNC Router

Wood carving CNC router is a computer numerical controlled machine used to make designs on wooden doors using software program. The required design is entered into a software program of the machine. The work piece is tightened by the screws to fix it on the bed of the machine. After giving work command, the router automatically starts carving the design onto the wooden piece according to the fed design. The power consumption of this machine is 2,200W. Figure 10 shows wood carving CNC Router.

Figure 10: Wood Carving CNC Router



Wood Sanding Machine

Wood sanding machine is used to make the rough surface of the wood smooth by abrasion⁶ with sand paper. It removes cutter marks, scratches, small glue spots and raised grains from the wood. It uses a sand paper with a mechanism to move it rapidly throughout the plank with hand hold position. Power consumption required for this machine is 320W. Figure 11 shows wood sanding machine.

Figure 11: Wood Sanding Machine



⁶ the process of scraping or wearing something away.

Moisture Meter

A moisture meter is used to detect level of moisture in a wooden plank. It consists of two pins that inserted into a wooden surface, which measures the electrical resistance between both the pin points and the meter shows reading of moisture content by translating electrical resistance. Figure 12 shows moisture meter.

Figure 12: Moisture Meter



Wooden Panel Bar Clamps

Wooden panel bar clamps are used to hold the pieces of woods together after gluing, this is done to align the wooden pieces together. It consists of a long bar with two jaws, one being moveable and the other fixed. Moveable jaw has a large screw which is tightened to hold a wooden piece firmly. Figure 13 shows wooden panel bar clamp.

Figure 13: Wooden Panel Bar Clamp



General Wood Worker Tool Kit

General tool kit includes hand carving tools, hand planing tools, measuring tools, hand saws, hand drills, sand papers, screw drivers, chisels, stainless steel rulers, measuring tapes, etc. Figure 14 shows general wood worker tools.

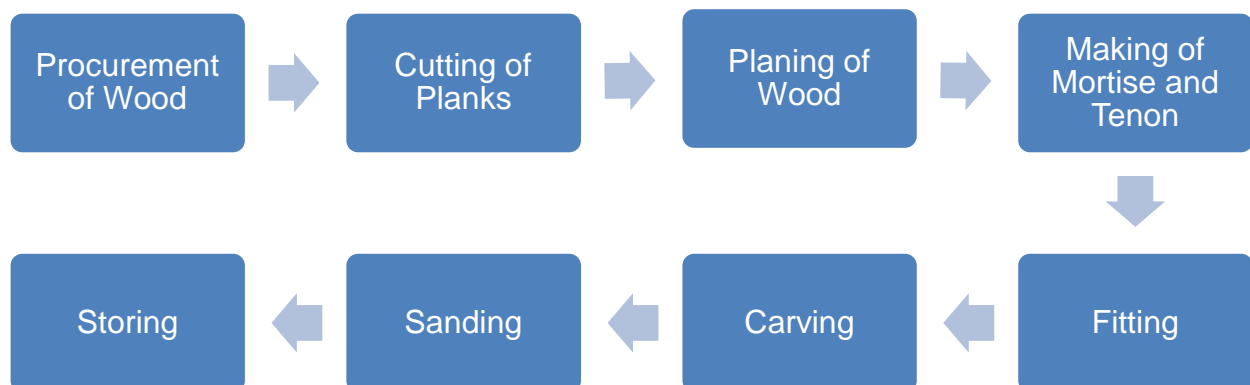
Figure 14: General Wood Worker Tool Kit



5.2 Production Process Flow

The production process flow of manufacturing wooden doors is shown in Figure 15.

Figure 15: Manufacturing Process of Wooden Doors



Procurement of Wood

The first step to manufacturing wooden doors is the procurement of wooden planks. Local seasoned wooden⁷ planks are procured for the proposed project. The wood required for the proposed project is available in all the major markets across Pakistan. The wooden planks are procured in cubic feet measurement. The prices of wooden planks are different for different types of wood. Diyar and Ash wood are the most expensive woods and most commonly used to manufacture entrance and bedroom doors. Yellow pine and Kail wood are used for all types of doors as they are cheap compared to Diyar and Ash wood. Wood planks are usually purchased on 10 days credit period.

During procurement, the quality of the wood is closely inspected. The wooden plank is visually inspected for worm holes, rots and knots. Figure 16 shows worm holes, rots and knots in the wood. Moisture content is also checked with the help of moisture meter. Seasoned wood is required for door manufacturing and the moisture content must not be over 15%, since in such a case, the wooden plank can crack during production process or bend after it is used for making doors. After inspection, the raw material is procured from the supplier.

Figure 16: Worm Holes, Rots and Knots in Wood



The wooden planks can be stored both vertically and horizontally. The planks must be stored in a clean and dry place to prevent them from absorbing moisture.

Raw material inventory equal to one month of production is commonly maintained in this business. Figure 17 shows wooden planks.

⁷ Seasoned wood means the wood that has a moisture content equal to or less than 20%

Figure 17: Wooden Planks**Cutting of Wooden Planks**

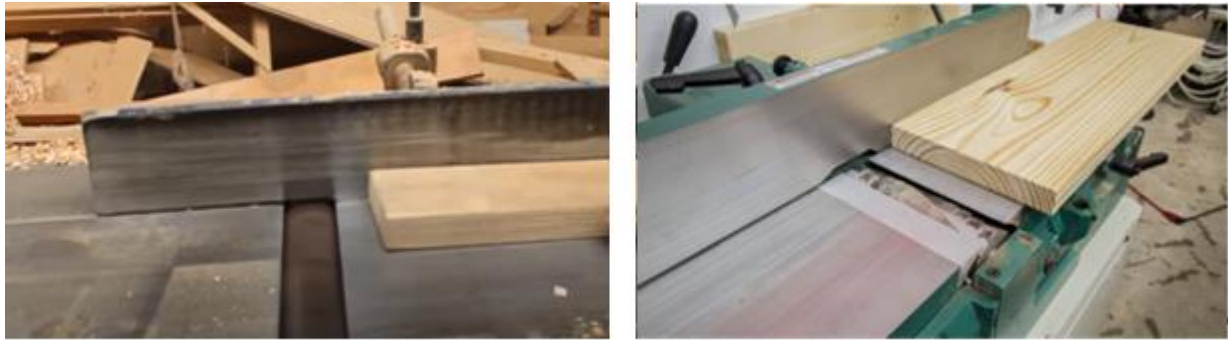
After procurement, the wooden planks are marked and cut with vertical band saw machine according to the measurements of the required door. The wooden plank is manually passed according to marked measurements through the blade of the machine which cuts the wood. Figure 18 shows cutting of wooden planks.

Figure 18: Cutting of Wooden Planks

Planing of Wood

In this process, the wood pieces from the vertical band saw machine are fed into the in-feed table of the wood surface planer machine. The height of the in-feed table is manually adjusted according to the desired level. The wood is manually passed over the cutter head. The cutter head removes the extra layer of wood to flatten the surface of the wood. Figure 19 shows surface planing of wood.

Figure 19: Surface Planing of Wood



After surface planing of wood, the wood is entered into a thickness planer machine. The wooden plank passes through the cutter head with the help of feeder roller. The cutter head of the machine trims the undesired upper layer of wood from the work piece to achieve the required thickness. Figure 20 shows thickness planing of wood.

Figure 20: Thickness Planning of Wood



Making of Mortise and Tenon

Wood mortiser machine is used to make mortise on the piece of wood in which the tenon is inserted. The wooden piece is tightened on the table of mortiser machine with the help of the screw under the chisel, where mortise is required. Multiple penetration of chisel creates the required mortise according to the size of the tenon. Figure 21 shows wood mortising.

Figure 21: Mortising

After mortising, the tenon is made with the help of spindle moulder machine. The spindle of the spindle moulder machine consists of adjustable blades which rotates to make tenons of the required sizes. Figure 22 shows making of tenons and grooves.

In making of semi-solid doors, the spindle moulder machine is also used to make grooves at the inner side of frame in which the MDF sheet is fitted.

Figure 23 shows making of grooves.

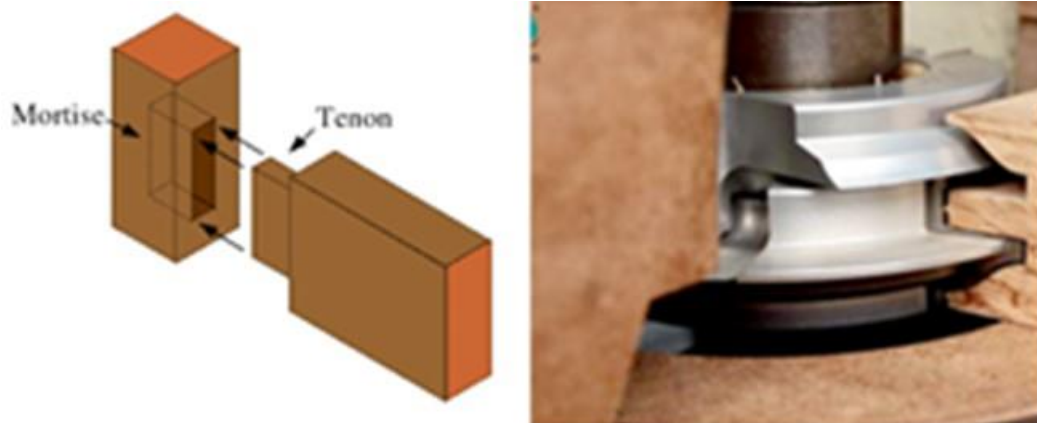
Figure 22: Making of Tenons

Figure 23: Making of Grooves**Fitting**

After formation of tenon on one piece of wood and mortise on the other piece of the wood, the wood glue is applied inside the mortise and on the tenons. Different pieces of wood are attached by tenoning process to form the structure of the door. After fitting, bar clamps are used to securely keep the joint together permanently. Iron nails are fastened as a precaution to keep the joints in place. The door is left for an hour to dry the glue, which is necessary for the proper joining of the joints. After an hour of drying, the structure of door is prepared for designing.

For fitting of semi-solid doors, the MDF sheet is adjusted into the grooves made into wooden pieces of door frame. The lengths and widths frame are connected through the same process used for making a tenon-mortise joint in solid wooden doors. MDF sheet comes in a standard size of 8 feet length and 4 feet width. The standard size sheet is cut according to the size of the door. The cost of MDF sheet for bedroom and washroom door will be same. Figure 24 shows fitting of wooden pieces.

Figure 24: Fitting**Carving**

After fitting, the fitted solid wooden door is placed on the bed of CNC router machine for creating designs on the surface of the door. The designer makes the design of the door on a computer software (Fusion 360) according to the requirement of the

customer. The customer may also choose already available designs. The design is entered into the machine via software. After work command, the router starts carving onto the door and making design according to the design entered into the software. The design may be made on any type of door but is more commonly made on main entry doors. Figure 25 shows process of carving.

Figure 25: Carving



Sanding

For finishing of wooden doors, sanding is done with the help of sanding machine which smoothens the rough surface of the door. Sanding machine removes small amounts of material from the surface of wood with an abrasive. Sanding machine enhances the appearance of the wood. Sanding may also be done manually but it takes more time than that by a sanding machine Figure 26 shows wood sanding.

Figure 26: Sanding Process



Storing

After sanding, the manufactured door is visually inspected to verify that the surface of the door or frame does not contain open holes and breaks. The manufactured doors are stored after inspection into the finished goods storeroom until they are shipped to the customer.

Payment

Credit period of 10 days are allowed to the customers. The doors are transported to the customer premises either by the manufacturer or by the customer. The customer pays the transportation cost of delivering the doors to the customer premises.

5.3 Installed and Operational Capacities

The proposed manufacturing unit has a maximum annual capacity of manufacturing 3,000 doors which includes 40% MDF sheet doors, 25% Kail wood doors, 17% Yellow Pine wood doors, 12% Ash wood doors and 6% Deodar wood doors. It translates into 750 Kail wood doors (300-bedroom doors, 150 main entry doors, 300 washroom doors), 510 Yellow Pine wood doors (180-bedroom doors, 150 main entry doors, 180 washroom doors), 360 Ash wood doors (120-bedroom doors, 120 main entry doors, 120 washroom doors), 180 Deodar wood doors (30-bedroom doors, 150 main entry doors), and 1200 MDF sheet doors (600-bedroom doors, and 600 washroom doors).

Initially, the project is estimated to manufacture wooden doors at 60% of the total production capacity, which is equal to 1,800 doors. It includes 450 Kail wood doors (180-bedroom doors, 90 main entry doors, 180 washroom doors), 306 Yellow Pine wood doors (108-bedroom doors, 90 main entry doors, 180 washroom doors), 216 Ash wood doors (72-bedroom doors, 72 main entry doors, 72 washroom doors), 108 Deodar wood doors (18-bedroom doors, 90 main entry doors), and 720 MDF sheet doors (360-bedroom doors, and 360 washroom doors).

The production capacity utilization is assumed to increase at a rate of 5% per annum with a maximum capacity of 95% achieved in Year 8. High return on investment and steady growth of business is expected with the entrepreneur having some prior experience or education in the related field of business.

Table 2 shows installed and operational capacity while Table 3 shows product wise distribution.

Table 2: Installed and Operational Capacity

No.of Skilled Workers	Hours Available Per Day Per Worker	Working Days Per Year	Total Skilled Hours Available	Average Time Required for One Door (Hours)	Total Production @ 100% Capacity (Doors)	Total Production @ 60% Capacity (Doors)
4	10	300	12,000	4	3,000	1,800

Table 3: Product Wise Distribution

Particulars	Production Ratio	Total Doors Production	Product-wise break-up @ 100% Capacity	Product-wise break-up @60%Capacity
Kail Wood Doors		3,000		
Bedroom Doors	10%		300	180
Entry Doors	5%		150	90
Washroom Doors	10%		300	180
Sub-Total	25%		750	450
Yellow Pine Wood Doors				
Bedroom Doors	6%		180	108
Entry Doors	5%		150	90
Washroom Doors	6%		180	108
Sub-Total	17%		510	306
Ashwood Doors				

Bedroom Doors	4%		120	72
Entry Doors	4%		120	72
Washroom Doors	4%		120	72
Sub-Total	12%		360	216
Deodar Wood Doors				
Bedroom Doors	1%		30	18
Entry Doors	5%		150	90
Sub-Total	6%		180	108
MDF Sheet Doors				
Bedroom Doors	20%		600	360
Washroom Doors	20%		600	360
Sub-Total	40%		1,200	720
Total	100%		3,000	1,800

6 CRITICAL FACTORS

Before making the decision to invest in the business, investor must know about key types of woods used for door manufacturing and their demand in market and also the risk factors of this business. Some critical factors are given below:

- Good understanding of the industry
- Good knowledge of market demand
- Easy availability of high-quality wood
- Evaluating prospective customer base
- Availability of skilled workforce
- Knowing major competitors
- Knowledge about the modern machinery and equipment

7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The manufacturing unit of wooden doors is proposed to be established in larger cities like Karachi, Lahore, Islamabad, Peshawar, Rawalpindi, Quetta, Faisalabad, Sialkot, Hyderabad, Muzaffarabad, Gujranwala, Multan, Sialkot, Sukkur, Mardan, Gilgit, Bahawalpur, Dera Ghazi Khan, Sahiwal or any other major city of Pakistan. Large cities will be suitable for the proposed business due to presence of large number of existing and new housing societies, commercial buildings, schools, public and private offices, etc. Additionally, due to increase in the urban population of Pakistan, large number of people are migrating to big cities. This urbanization trend is expected to increase the demand for new buildings and houses in these cities, which in turn is expected to increase the demand for wooden doors.

In addition to large cities, such business may also be established in small cities/towns, which have a sizeable population and where the basic requirements of the business, such as raw material availability, skilled labor availability, etc. can be easily fulfilled.

8 POTENTIAL TARGET CUSTOMERS / MARKETS

During the previous two decades, Pakistan has witnessed a fast growth in the establishment of modern housing societies, commercial buildings, hotels in all the major cities of the country. Owners of houses, hotels, apartments mostly prefer wooden doors because of their better look, durability and long life; which is why they can be classified as the primary customers of wooden doors. Metropolitan cities and cities with large urban and commercial base is more suitable for this type of business.

Potential target customer for this proposed unit will be house owners, schools, hotels, and offices etc. Recently, there were many societies under construction from past some years in major cities which creates market for this business. Homeowners of upper class and upper middle class of the local population are the major potential customers of the proposed business. In addition to homeowners, there will be great demand of wooden doors in luxury apartments, hotels, villas and offices.

9 PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of manufacturing unit for wooden doors. 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 Project Economics

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

9.2 Initial Project Cost Estimates

Table 4 provides fixed and working capital requirements for establishment and operations.

Table 4: Initial Project Cost

Cost Item	Cost (PKR)	Reference
Land	-	9.2.1
Building / Infrastructure	385,252	9.2.2
Machinery & Equipment	3,716,000	9.2.3
Tools and Equipment	228,000	9.2.4
Office equipment	759,000	9.2.5
Furniture & fixtures	227,000	9.2.6
Vehicle Requirement	126,000	9.2.7
Pre-operating costs	330,297	9.2.8
Advance against Building Rent	540,000	9.2.9
Total Capital Cost	6,311,549	

Working Capital Cost		
Equipment spare part inventory	15,483	
Raw material inventory	2,672,739	
Prepaid Building Rent	180,000	
Cash	1,000,000	
Total Working Capital	3,868,222	
Total Project Cost	10,179,772	

9.2.1 Land

The proposed unit of manufacturing of wooden doors will be established in a rented building to avoid the high cost of land. Suitable location for setting up a unit like this can be easily found on rent. Therefore, no land cost has been added to the project cost. Total space requirement for the proposed manufacturing unit has been estimated as 3,000 sq. ft. (13.33 Marla). The breakup of space requirement is provided in Table 5.

Table 5: Breakup of Land

Description	% Break-Up	Number	Area (Sq. Ft.)
Owners' Office	4%	1	120
Accounts Office	3%	1	80
Raw Material Area	25%	1	750
Production Area	40%	1	1,190
Finished Goods	26%	1	780
Washroom	3%	1	80
Total	100%		3,000

9.2.2 Building

There will be no cost of building since the proposed manufacturing unit of wooden doors will be started in the rented premises. However, there will be a renovation cost, required to make the building usable for the business. The proposed manufacturing unit requires estimated electricity load of around 40 KW for which an electricity connection under the industrial supply tariff, three phase will be required. Cost of such electricity connection has not been considered in this document since electricity connection is generally available in such rented premises. Building rent of PKR 180,000 per month has been included in the operating cost. Table 6 provides details of building renovation cost.

Table 6: Renovation Cost

Cost Item	Unit of Measurement	Total Liter / Area / Number	Cost/Unit/ Sq.feet	Total Cost (PKR)
Paint Cost	Liter	69	800	55,392
Labour Cost	Feet	6,924	15	103,860
Blinds	Units	4	7,000	28,000
Glass Partition	Sq. Feet	360	550	198,000
Total Cost				385,252

9.2.3 Machinery and Equipment

Table 7 provides details of machinery and equipment required for the project.

Table 7: Machinery and Equipment

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Wood Thickness Planer Machine	1	600,000	600,000
Wood Surface Jointer Planer Machine	1	500,000	500,000
Vertical Band Saw Machine	1	500,000	500,000
Mortiser Machine	1	200,000	200,000
Wood Spindle Moulder With Sliding Table	1	500,000	500,000
Cnc Carving Machine/ Cnc Router	1	550,000	550,000
Wood Sander Machine	2	8,000	16,000
Diesel Power Generator (50 KW)	1	850,000	850,000
Total			3,716,000

9.2.4 Tools and Equipment

Table 8 shows the details of tools and equipment.

Table 8: Tools and Equipment

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Moisture Meter	2	5,000	10,000
Wooden Panel Bar Clamps	8	8,500	68,000

General Wood Worker Tool Kit	3	20,000	60,000
Working Tables (Adda)	3	30,000	90,000
Total			228,000

9.2.5 Office Equipment Requirement

Table 9 presents the office equipment requirement proposed for the unit.

Table 9: Office Equipment Requirement

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Air Conditioner (1 Ton)	2	85,000	170,000
Laptop	1	150,000	150,000
Desktop Computer	2	75,000	150,000
Printer	1	50,000	50,000
LED/LCD 32	1	40,000	40,000
Water Dispenser	1	25,000	25,000
Ceiling Fan	8	8,000	64,000
Exhaust Fan	7	4,500	31,500
Pedestal Fan	4	10,000	40,000
Wi-Fi Router and Connection	1	3,500	3,500
Security System (8 Cams , 1 MP)	8	2,500	20,000
DVR	1	15,000	15,000
Total			759,000

9.2.6 Furniture and Fixture Requirement

Table 10 gives details of the furniture and fixture required for the project.

Table 10: Furniture and Fixtures Requirement

Cost Item	Units	Unit Cost(PKR)	Total Cost(PKR)
Executive Table (s)	1	60,000	60,000
Office Table	1	30,000	30,000
Executive Chairs	1	30,000	30,000

Office Chair	1	14,000	14,000
Staff Plastic Chair(s)	12	2,000	24,000
Staff Table	4	6,000	24,000
Sofa Sets	1	45,000	45,000
Total			227,000

9.2.7 Vehicle Requirement

Details of vehicles required for the project is given in Table 11.

Table 11: Vehicle Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Registration Fee (PKR)	Total Cost (PKR)
Motorcycle	1	120,000	6,000	126,000
Total Cost				126,000

9.2.8 Pre-Operating Cost Requirement

Details of pre operating cost required for the project is given in Table 12.

Table 12: Pre-Operating Cost Requirement

Description	No.of Months	Unit Cost (PKR)	Total (PKR)
Manager	1	60,000	60,000
Labor- Cutting - Skilled	1	35,000	35,000
Labor- Unskilled	1	25,000	25,000
CNC Machine Operator	1	40,000	40,000
Raw Material Store Incharge	1	40,000	40,000
Office Boy	1	25,000	25,000
Security Guards	1	25,000	25,000
Utilities			80,297
Total (PKR)			330,297

9.2.9 Advance against Building Rent

Details of advance against building rent for the project is given in Table 13.

Table 13: Advance against Building Rent

Cost Item	Months	Unit Cost (PKR)	Total Cost (PKR)
Advance Against Building Rent	3	180,000	540,000
Total Cost (PKR)			540,000

9.3 Breakeven Analysis

Table 14 shows calculation of break-even analysis.

Table 14: Break-Even Analysis

Description	Amount First Year (PKR)	Ratios
Sales (PKR) – A	47,979,000	100%
Variable Cost (PKR) – B	38,473,773	80%
Contribution (PKR) (A-B) = C	9,505,227	20%
Fixed Cost (PKR) – D	5,684,633	12%
Breakeven Revenue	28,694,002	
Contribution Margin Per Unit	5,281	
Breakeven Units (No. of Doors)	1,076	
Breakeven Capacity	36%	

9.4 Revenue Generation

Based on 60% capacity utilization, sales revenue during the first year of operations is shown in Table 15.

Table 15: Revenue Generation

Product	Capacity Utilization @ 60%	Price/ Door (PKR)	Total Revenue (PKR)
Kail Wood Doors			
Bedroom Door	180	20,000	3,600,000
Entry Door	90	47,000	4,230,000
Washroom Doors	180	13,000	2,340,000

Sub-Total	450		10,170,000
Yellow Pine Wood Doors			
Bedroom Door	108	25,500	2,754,000
Entry Door	90	60,000	5,400,000
Washroom Doors	108	16,000	1,728,000
Sub-Total	306		9,882,000
Ashwood Doors			
Bedroom Door	72	30,000	2,160,000
Entry Door	72	70,000	5,040,000
Washroom Doors	72	19,000	1,368,000
Sub-Total	216		8,568,000
Deodar Wood Doors			
Bedroom Door	18	35,500	639,000
Entry Door	90	80,000	7,200,000
Sub-Total	108		7,839,000
MDF Sheet Doors			
Bedroom Door	360	17,500	6,300,000
Washroom Door	360	14,500	5,220,000
Sub-Total	720		11,520,000
Total	1,800		47,979,000

9.5 Variable Cost Estimate

Variable costs of the project have been provided in Table 16.

Table 16: Variable Cost Estimate

Description of Costs	Amount (PKR)
Material Cost- Kail Wood	6,141,960
Material Cost- Yellow Pine Wood	7,019,964
Material Cost- Aashwood	6,215,040
Material Cost- Deodar Wood	5,491,584

Material Cost- MDF Sheet Doors	7,204,320
Material Transportation Cost	641,454
Direct Electricity	758,320
Direct Labor	3,540,000
Fuel Cost-Generator	303,328
Machinery Maintenance – Cost	185,800
Communications expense (phone, fax, mail, internet, etc.)	324,000
Office vehicles running expense	216,000
Office expenses (stationery, entertainment, janitorial services, etc.)	324,000
Travelling Expenses	108,000
Total Variable Cost	38,473,773

Table 17: Material Cost

Material	Cost Per Door (PKR)	No. of Doors	Total Cost (PKR)
Kail Wood Doors			
Material Cost- Kail Wood Bed Room Door	12,144	180	2,185,920
Material Cost- Kail Wood House Entry Door	28,200	90	2,538,000
Material Cost- Kail Wood Washroom Door	7,878	180	1,418,040
Sub-Total			6,141,960
Yellow Pine Wood Doors			
Material Cost- Yellow Pine Wood Bed Room Door	18,116	108	1,956,528
Material Cost- Yellow Pine Wood House Entry Door	42,200	90	3,798,000
Material Cost- Yellow Pine Washroom Door	11,717	108	1,265,436
Sub-Total			7,019,964
Ash wood Doors			
Material Cost- Aashwood Bed Room Door	21,699	72	1,562,328
Material Cost- Aashwoodwood House Entry Door	50,600	72	3,643,200

Material Cost- Aashwood Washroom Door	14,021	72	1,009,512
Sub-Total			6,215,040
Deodar Wood Doors			
Material Cost- Deodar Wood Bed Room Door	24,088	18	433,584
Material Cost- Deodar Wood House Entry Door	56,200	90	5,058,000
Sub-Total			5,491,584
MDF Sheet Doors			
Material Cost- MDF Sheet Bedroom Door (Kail Wood Frame)	10,706	360	3,854,160
Material Cost- MDF Sheet Washroom Door (Kail Wood Frame)	9,306	360	3,350,160
Sub-Total			7,204,320
Total Material Cost (PKR)			32,072,868

Table 18: Direct Labor

Post	No. of personnel	Monthly Salary (PKR)	Annual Salary (PKR)
Labor Skilled	4	35,000	1,680,000
Labor- Unskilled	3	25,000	900,000
Designer and CNC Machine Operator	1	40,000	480,000
Stores Incharge	1	40,000	480,000
Total Direct Labor (PKR)	9		3,540,000

Table 19: Machinery Maintenance Cost

Cost Item	Cost of Machinery (PKR)	Machinery Maintenance Rate	Total Cost (PKR)
Machinery Maintenance Cost	3,716,000	5%	185,800
Total Cost (PKR)			185,800

Table 20: Variable Cost Assumptions

Particulars	Details
Office vehicles running expense	10% of administration expense
Fuel Cost- Generator	40% of direct electricity cost
Machinery Maintenance – Cost	5% of cost of machinery
Material Transportation Cost	2% of material cost
Travelling expense	5% of administration expense
Communications expense (phone, mail, internet, etc.)	15% of administration expense
Office expenses (stationery, entertainment, janitorial services, etc.)	15% of administration expense

9.6 Fixed Cost Estimate

Table 21 shows the estimated fixed cost of the project.

Table 21: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Management Staff	2,160,000
Administration benefits expense	285,000
Building rental expense	2,160,000
Electricity	205,248
Depreciation Expense	808,325
Amortization of pre-operating costs	66,059
Total Fixed Cost	5,684,633

Table 22: Fixed Cost Assumption-Management Staff Salary

Post	No of personnel	Monthly Salary (PKR)	Annual Salary (PKR)
Manager	1	60,000	720,000
Accountant	1	45,000	540,000
Office Boy	1	25,000	300,000
Security Guards	2	25,000	600,000

Total (PKR)	7		2,160,000
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Table 23: Fixed Cost Assumptions

Particulars	Details
Administration benefits expense	5% of administration expense
Depreciation expense	
Building Renovation	10% of cost
Machinery, Vehicle & Office Equipment	15% of cost
Tools and Equipment	20% of Cost

9.7 Financial Feasibility Analysis

The financial feasibility analysis provides the information regarding projected Internal Rate of Return (IRR), Net Present Value (NPV) and Payback period of the proposed business, which is shown in Table 24.

Table 24: Financial Feasibility Analysis

Description	Project
IRR	60%
NPV (PKR)	25,701,463
Payback Period (years)	2.43
Projection Years	10
Discount rate used for NPV	25%

9.8 Financial Feasibility Analysis with 50% Debt

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the proposed business on the basis of Debt: Equity Model (50:50), which is shown in Table 25.

Table 25: Financial Feasibility Analysis with 50% Debt

Description	Project
IRR	59%
NPV (PKR)	31,361,363
Payback Period (years)	2.48
Projection Years	10

Discount rate used for NPV

22%

9.9 Human Resource Requirement

For the 1st year of operations, the manufacturing of wooden doors shall require the workforce at a salary cost shown in Table 26.

Table 26: Human Resource Requirement

Post	No of Personnel	Monthly Salary (PKR)	Annual Salary (PKR)
Manager	1	60,000	720,000
Labor Skilled	4	35,000	1,680,000
Labor Unskilled	3	25,000	900,000
CNC Machine Operator	1	40,000	480,000
Raw Material Store Incharge	1	40,000	480,000
Accountant	1	45,000	540,000
Office Boy	1	25,000	300,000
Security	2	25,000	600,000
Total (PKR)	14		5,700,000

10 CONTACT DETAILS

Contact details of some suppliers of the relevant machinery and equipment are provided in Table 27.

Table 27: Contact Details

Supplier Name	Origin	Nature of Supplier	Contact Number	Email/Website
Weihai Rico Machinery Co., Ltd.,	China	Machinery and Equipment		http://www.ricomachinery.com
Shanghai Fuma Woodworking Machinery & Equipment Co., Ltd	China	Machinery and Equipment		http://www.shfuma.com.cn

Jinan Blue Elephant Cnc Machinery Co., Ltd.	China	Machinery and Equipment		http://www.elephant-cnc.com
Shanghai Honggang Machinery Manufacturing Co., Ltd.	China	Machinery and Equipment		http://www.have-machine.com
Qingdao Hezhi Machinery Co., Ltd.	China	Machinery and Equipment		http://www.woodworkingchina.com
Ejaz hussain Timber Merchant	Pakistan	Raw material	0333 4240504	
Multani Timber Merchant	Pakistan	Raw material	0305 5641904	
Awan Timber Merchant	Pakistan	Raw material	0321 4343122	
ZRK MDF & Particle Board	Pakistan	Raw material	+92 (91) 111 975 975	https://zrkgroup.com/

11 USEFUL WEB LINKS

Table 28: Useful Web Links

Name of the Organization	Email/Website
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program	www.nbdp.org.pk
Government of Pakistan	www.pakistan.gov.pk
Federal Ministry of Industries & Production	www.moip.gov.pk/
State Bank of Pakistan	www.sbp.org.pk
Trade Development Authority of Pakistan	www.tdap.gov.pk
Punjab Small Industries Corporation (PSIC)	www.psic.org.pk
Sindh Small Industries Corporation (SSIC)	www.ssic.gos.pk
Small Industries Development Board KPK	www.small_industries_de.kp.gov.pk
Industries and Commerce Department Balochistan	www.dgicd.gob.pk/
Federal Board of Revenue	www.fbr.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.kp.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Azad Jammu and Kashmir	www.ajk.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Punjab Board of Investment and Trade	www.pbit.gop.pk/
Small Industries Development Board Khyber Pakhtunkhwa	www.small_industries_de.kp.gov.pk
All Pakistan Timber Traders Association	www.aptta.pk
All Pakistan Furniture Makers Association	https://buildingresources.pk/institutions-associations/apfma/
Constructors Association of Pakistan (CAP)	https://cappak.org/

12 ANNEXURES

12.1 Income Statement

Calculations	SMEDA									
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue - Kail Wood Door	10,170,000	12,251,460	14,671,595	17,480,157	20,733,797	24,496,981	28,843,034	33,855,312	37,647,107	41,863,583
Revenue- Yellow Pine Wood Door	9,882,000	11,904,516	14,256,116	16,985,144	20,146,645	23,803,261	28,026,240	32,896,577	36,580,994	40,678,065
Revenue - Aashwood Door	8,568,000	10,321,584	12,360,494	14,726,645	17,467,765	20,638,164	24,299,618	28,522,351	31,716,855	35,269,142
Revenue-Deodar Wood Door	7,839,000	9,443,382	11,308,813	13,473,643	15,981,537	18,882,186	22,232,108	26,095,555	29,018,257	32,268,301
Revenue- MDF Sheet Door	11,520,000	13,877,760	16,619,151	19,800,532	23,486,071	27,748,793	32,671,755	38,349,380	42,644,510	47,420,695
Total Revenue	47,979,000	57,798,702	69,216,169	82,466,121	97,815,815	115,569,385	136,072,754	159,719,175	177,607,722	197,499,787
Cost of sales										
Material Cost- Kail Wood	6,141,960	7,339,130	8,717,758	10,302,522	12,121,260	14,205,359	16,590,188	19,315,588	21,305,093	23,499,518
Material Cost- Yellow Pine Wood	7,019,964	8,388,272	9,963,977	11,775,285	13,854,016	16,236,040	18,961,785	22,076,785	24,350,694	26,858,815
Material Cost- Aashwood	6,215,040	7,426,455	8,821,486	10,425,106	12,265,485	14,374,381	16,787,586	19,545,414	21,558,591	23,779,126
Material Cost- Deodar Wood	5,491,584	6,561,985	7,794,629	9,211,581	10,837,732	12,701,145	14,833,443	17,270,248	19,049,083	21,011,139
Material Cost- MDF Sheet Doors	7,204,320	8,178,502	9,251,661	10,437,257	11,750,476	13,208,438	14,830,434	16,638,195	17,723,380	18,920,339
Material Transportation Cost	641,457	835,949	1,083,987	1,399,669	1,800,705	2,309,313	2,953,351	3,767,720	4,556,302	5,512,861
Direct Electricity	758,320	886,413	1,030,012	1,190,767	1,370,493	1,571,185	1,795,033	2,044,442	2,205,953	2,380,224
Direct Labor	3,540,000	3,883,380	4,260,068	4,673,294	5,126,604	5,623,885	6,169,401	6,767,833	7,424,313	8,144,472
Fuel Cost-Generator	303,328	391,085	501,249	639,165	811,407	1,026,041	1,292,961	1,624,290	1,933,127	2,300,686
Machinery Maintenance - Cost	185,800	204,937	226,046	249,329	275,010	303,336	334,579	369,041	407,052	448,978
Total cost of sales	37,501,773	44,096,109	51,650,870	60,303,976	70,213,188	81,559,123	94,548,762	109,419,556	120,513,589	132,856,157
Gross Profit	10,477,227	13,702,593	17,565,298	22,162,145	27,602,627	34,010,263	41,523,992	50,299,619	57,094,133	64,643,630
General administration & selling expenses										
Management Staff	2,160,000	2,369,520	2,599,363	2,851,502	3,128,097	3,431,523	3,764,381	4,129,525	4,530,089	4,969,508
Administration benefits expense	285,000	312,645	342,972	376,240	412,735	452,770	496,689	544,868	597,720	655,699
Building rental expense	2,160,000	2,376,000	2,613,600	2,874,960	3,162,456	3,478,702	3,826,572	4,209,229	4,630,152	5,093,167
Electricity	205,248	221,463	238,958	257,836	278,205	300,183	323,898	349,486	377,095	406,885
Travelling expense	108,000	118,476	129,968	142,575	156,405	171,576	188,219	206,476	226,504	248,475
Communications expense (phone, fax, mail, internet, etc.)	324,000	355,428	389,905	427,725	469,215	514,728	564,657	619,429	679,513	745,426
Office vehicles running expense	216,000	236,952	259,936	285,150	312,810	343,152	376,438	412,953	453,009	496,951
Office expenses (stationery, entertainment, janitorial services, etc.)	324,000	355,428	389,905	427,725	469,215	514,728	564,657	619,429	679,513	745,426
Depreciation expense	808,325	808,325	808,325	808,325	808,325	834,839	593,439	1,489,702	1,489,702	1,489,702
Amortization of pre-operating costs	66,059	66,059	66,059	66,059	66,059	-	-	-	-	-
Subtotal	6,656,633	7,220,296	7,838,992	8,518,098	9,263,522	10,042,202	10,698,949	12,581,097	13,663,299	14,851,241
Operating Income	3,820,594	6,482,296	9,726,307	13,644,047	18,339,105	23,968,060	30,825,043	37,718,522	43,430,834	49,792,389
Other income	32,118	38,691	46,335	55,204	65,480	77,364	91,090	106,919	118,894	132,210
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	929,000	-	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	189,750	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	31,500	-	-	-
Earnings Before Interest & Taxes	-	3,852,712	6,520,988	9,772,641	13,699,251	18,404,585	24,045,425	32,066,382	37,825,441	49,924,599
Earnings Before Tax	3,852,712	6,520,988	9,772,641	13,699,251	18,404,585	24,045,425	32,066,382	37,825,441	43,549,728	49,924,599
Tax	686,860	1,420,247	2,447,476	3,839,775	5,251,375	6,943,627	10,121,574	11,993,268	13,853,661	15,925,494
NET PROFIT/(LOSS) AFTER TAX	3,165,852	5,100,741	7,325,165	9,859,476	13,153,210	17,101,798	21,944,808	25,832,173	29,696,067	33,999,105

12.2 Balance Sheet

Calculations	SMEDA										
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	1,000,000	1,847,679	3,393,364	4,746,512	5,983,095	6,889,129	8,094,281	18,786,257	42,407,150	69,158,356	127,227,945
Accounts Receivable		1,314,493	1,449,010	1,739,930	2,077,840	2,469,616	2,923,085	3,447,153	4,051,944	4,620,916	5,138,459
Raw Material Inventory	2,672,739	3,483,122	4,516,611	5,831,955	7,502,936	9,622,136	12,305,631	15,698,835	18,984,591	22,970,252	-
Equipment Spare Part Inventory	15,483	18,718	22,628	27,354	33,068	39,976	48,326	58,421	70,624	85,377	-
Pre-paid building rent	180,000	198,000	217,800	239,580	263,538	289,892	318,881	350,769	385,846	424,431	-
Total Current Assets	3,868,222	6,862,012	9,599,412	12,585,331	15,860,477	19,310,748	23,690,203	38,341,434	65,900,155	97,259,331	132,366,404
<i>Fixed assets</i>											
Building/Infrastructure	385,252	346,727	308,202	269,676	231,151	192,626	154,101	115,576	77,050	38,525	-
Machinery & equipment	3,716,000	3,158,600	2,601,200	2,043,800	1,486,400	929,000	371,600	7,059,104	6,000,238	4,941,373	3,882,507
Tools and Equipment	228,000	182,400	136,800	91,200	45,600	360,568	288,455	216,341	144,227	72,114	570,217
Furniture & fixtures	227,000	192,950	158,900	124,850	90,800	56,750	22,700	431,221	366,538	301,855	237,171
Office vehicles	126,000	107,100	88,200	69,300	50,400	31,500	12,600	261,596	222,357	183,117	143,878
Office equipment	759,000	645,150	531,300	417,450	303,600	189,750	75,900	1,441,835	1,225,560	1,009,285	793,009
Advance Against Building Rent	540,000	540,000	540,000	540,000	540,000	540,000	540,000	540,000	540,000	540,000	540,000
Total Fixed Assets	5,981,252	5,172,927	4,364,602	3,556,276	2,747,951	2,300,194	1,465,355	10,065,673	8,575,971	7,086,268	6,166,783
<i>Intangible assets</i>											
Pre-operation costs	330,297	264,238	198,178	132,119	66,059	-	-	-	-	-	-
Total Intangible Assets	330,297	264,238	198,178	132,119	66,059	-	-	-	-	-	-
TOTAL ASSETS	10,179,772	12,299,177	14,162,192	16,273,726	18,674,487	21,610,942	25,155,559	48,407,107	74,476,126	104,345,600	138,533,187
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		536,479	640,587	760,455	898,228	1,056,322	1,237,464	1,444,728	1,681,574	1,854,981	2,043,464
Total Current Liabilities	-	536,479	640,587	760,455	898,228	1,056,322	1,237,464	1,444,728	1,681,574	1,854,981	2,043,464
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	10,179,772	10,179,772	10,179,772	10,179,772	10,179,772	10,179,772	10,179,772	11,279,247	11,279,247	11,279,247	11,279,247
Retained earnings		1,582,926	3,341,834	5,333,499	7,596,488	10,374,849	13,738,323	35,683,132	61,515,305	91,211,371	125,210,476
Total Equity	10,179,772	11,762,698	13,521,605	15,513,271	17,776,260	20,554,620	23,918,095	46,962,379	72,794,552	102,490,619	136,489,723
TOTAL CAPITAL AND LIABILITIES	10,179,772	12,299,177	14,162,192	16,273,726	18,674,487	21,610,942	25,155,559	48,407,107	74,476,126	104,345,600	138,533,187

12.3 Cash Flow Statement

Calculations											SMEDA
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		3,165,852	5,100,741	7,325,165	9,859,476	13,153,210	17,101,798	21,944,808	25,832,173	29,696,067	33,999,105
Add: depreciation expense		808,325	808,325	808,325	808,325	808,325	834,839	593,439	1,489,702	1,489,702	1,489,702
amortization of pre-operating costs		66,059	66,059	66,059	66,059	66,059	-	-	-	-	-
Equipment inventory	(15,483)	(3,234)	(3,910)	(4,727)	(5,714)	(6,908)	(8,350)	(10,095)	(12,203)	(14,753)	85,377
Raw Material Inventory	(2,672,739)	(810,383)	(1,033,489)	(1,315,344)	(1,670,981)	(2,119,200)	(2,683,494)	(3,393,204)	(3,285,756)	(3,985,661)	22,970,252
Pre-paid building rent	(180,000)	(18,000)	(19,800)	(21,780)	(23,958)	(26,354)	(28,989)	(31,888)	(35,077)	(38,585)	424,431
Accounts payable		536,479	104,108	119,868	137,772	158,094	181,142	207,263	236,846	173,407	188,483
Cash provided by operations	(2,868,222)	2,430,605	4,887,518	6,686,648	8,833,070	11,641,451	14,943,475	18,786,257	23,620,893	26,751,206	58,639,807
<i>Financing activities</i>											
Issuance of shares	10,179,772	-	-	-	-	-	-	1,099,476	-	-	-
Cash provided by / (used for) financing activit	10,179,772	-	-	-	-	-	-	1,099,476	-	-	-
<i>Investing activities</i>											
Capital expenditure	(6,311,549)	-	-	-	-	(360,568)	-	(9,193,756)	-	-	(570,217)
Cash (used for) / provided by investing activit	(6,311,549)	-	-	-	-	(360,568)	-	(9,193,756)	-	-	(570,217)
NET CASH	1,000,000	2,430,605	4,887,518	6,686,648	8,833,070	11,280,883	14,943,475	10,691,976	23,620,893	26,751,206	58,069,590

13 KEY ASSUMPTIONS

13.1 Operating Cost Assumptions

Table 29: Operating Cost Assumptions

Descriptions	Details
Building rent growth rate	10%
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation growth rate	10.3%
Wage growth rate	10%
Electricity price growth rate	7.9%
Office equipment price growth rate	9.6%

13.2 Revenue Assumptions

Table 30: Revenue Assumptions

Description	Details
Sale price growth rate	11.2%
Initial year capacity utilization	60%
Capacity growth rate	5%
Maximum capacity utilization	95%

13.3 Financial Assumptions

Table 31: Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate	25%
Discount Rate (50% Debt: 50% Equity)	22%

13.4 Debt-Related Assumption

Figure 27: Debt-Related Assumption

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	50:50
Discount Rate	22%
Debt Tenure	5 years
Grace Period	1 Year
Interest Rate (KIBOR+3%)	19%

13.5 Cash Flow Assumptions

Table 32: Cash Flow Assumptions

Description	Day(s)
Accounts receivable cycle	10
Accounts payable cycle	10

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