



Pre-feasibility Study

PAPER BAG MANUFACTURING

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, 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

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2. EXECUTIVE SUMMARY

Environment plays an important role in the healthy living of human beings. It is a source of natural beauty, and it is necessary for proper physical and mental health. During recent years, the government has been running campaigns to plant trees and replace plastic bags with the paper bags; a change which has already demonstrated its positive impact on the society. Paper bags are one hundred percent recyclable because they don't contain toxic and poisonous gas that plastic bags emit during recycling. A paper bag is a carry bag made from paper, usually produced from chemical pulp manufactured by Kraft process. The most relatable example includes the brown paper bags that are available from almost every retail outlet. These paper bags are made from Kraft paper.

Government's policy of banning plastic bags has created an increased demand for paper bags in the local market; due to which paper bag manufacturing has emerged as an attractive investment opportunity. This pre-feasibility study on Paper Bag Manufacturing Unit discusses the prospects of tapping this market opportunity. Amid rising demand and changing trends, there are few players in market who are currently serving this need.

This "Pre-feasibility Document" provides details for setting up "Paper Bag Manufacturing Unit", which has a capacity of manufacturing 5.6 million bags in a year at a maximum capacity of 100%. The initial starting capacity in "Year One" is assumed to be 55%, with 3.08 million bags production units annually.

The unit is proposed to be ideally located in metropolitan cities like Lahore, Karachi, and Islamabad, and other cities with sizeable shares of affluent population, such as Faisalabad, Gujranwala, Hyderabad, Peshawar, Quetta and Multan. These cities are preferred due to their closeness to the market and convenient availability of raw material and skilled labor.

A small size "Paper Bag Manufacturing Unit" will be set up in a rented building with area of 3,150 square feet. The project requires a total investment of PKR 6.92 million. This includes capital investment of PKR 5.26 million and working capital of PKR 1.66 million. This project is financed through 100% equity. The Net Present Value (NPV) of project is PKR 67.27 million with an Internal Rate of Return (IRR) of 82% and a Payback period of 2.07 years. Further, this project is expected to generate Gross Annual Revenues of PKR 66.2 million during 1st year, with Gross Profit (GP) ratio ranging from 13% to 21% and Net Profit (NP) ratio ranging from 3% to 15% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 67% (2.05 million bags) with annual revenues of PKR 45.03 million.

The proposed project may also be established using leveraged financing. With 50% debt financing, at a cost of KIBOR+3%, the proposed Paper Bag Manufacturing unit provides Net Present Value (NPV) of PKR 75.21 million, Internal Rate of Return (IRR) of 81% and Payback period of 2.08 years after considering the impact of debt

financing. Further, this project is expected to generate Net Profit (NP) ratio ranging from 2% to 15% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 71% (2.19 million bags) with annual revenues of PKR 48.12 million.

The proposed project will provide employment opportunities to 24 people including the owner. 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 legal business status of this project is proposed as "Sole Proprietorship". Further, the proposed project may also be established as a "Partnership Concern".

3. INTRODUCTION TO SMEDA

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

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives. Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

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

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

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of providing an effective handholding to SMEs. The proposed program is aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

4. PURPOSE OF THE DOCUMENT

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

The purpose of this document is to provide information to the potential investors about “Paper Bag Manufacturing Unit”. 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

Environment is the key for existence of life on the earth. Soil is one of the components of environment. It is useful to protect the environment by using eco-friendly products. Plastic bags cause harm to the soil since they are not biodegradable; whereas paper bags are 100% biodegradable, reusable, and recyclable. A paper bag is a carry bag made of paper, which is usually produced from chemical pulp manufactured by Kraft process. The most relatable example includes the brown paper bags that are available at every retail outlet (shown in Figure 1). These paper bags are made from Kraft paper.

In addition to these simple Kraft paper bags which are also called universal paper, there are Bleach paper bag and Art card bag, gift bags or tote-style paper bags. These bags are made from a variety of papers that differ in their quality, texture, color, and print. These bags can also be made from recycled paper. Paper bags are commonly used for packaging, as sacks, or as shopping bags. Due to their eco-friendliness, paper bags are in demand by wide majority of enterprises to pack their products. Paper bag has a diverse usage; ranging from food products to medical items.

The products proposed in this pre-feasibility study are Kraft paper bag, bleach paper bag and art card paper bag. Kraft paper bag has natural light brown color, while Bleach paper bag is the strongest white paper bag. It is used where strength,

printability and appearance are important. Art card bag is high class luxurious bag. The price and quality is usually higher than other paper bags.

Figure 1: Proposed Paper Bag Products



Printed Paper Bags

The proposed project can produce printed bags as shown in Figure 2.

Figure 2: Printed Paper Bags



In February 2020, the Lahore High Court ordered the Environmental Protection Agency to ensure a complete ban on the manufacturing, sale and use of plastic bags in Punjab. Earlier, in February, the court had banned the use of polythene and plastic bags at all mega stores in Lahore; the ban was later extended to Gujranwala and Faisalabad.

This change provides an attractive opportunity for setting up Paper Bag Manufacturing Unit which has a good market in Pakistan. Major cities of Pakistan, Lahore, Karachi, and Islamabad and other cities with sizeable shares of affluent population, such as Rawalpindi, Faisalabad, Gujranwala, Hyderabad, Peshawar, Quetta and Multan are suitable locations for setting up the manufacturing unit.

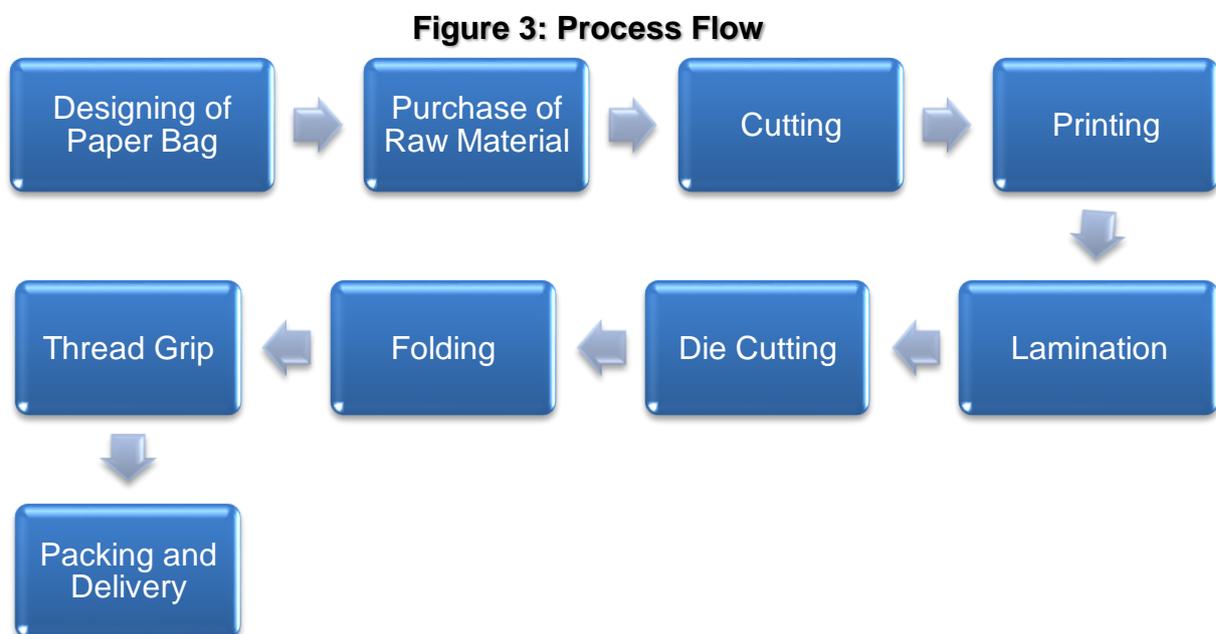
Increased supply of paper bags in the country will help reduce the use of plastic bags. The proposed project, at maximum installed capacity (100%), can manufacture 5.6 million bags per year. However, during the first year of operations, the project will attain a capacity utilization of 55% to produce 3.08 million paper bags.

Total area required for the unit would be of 3,150 Sq. ft. which shall be rented. Estimated total employment required for this project is 20-25 persons.

5.1. Production Process Flow

Process Flow

The production process flow of a Kraft paper bag, Bleach paper bag and Art card bag is given in Figure 3.



Brief description of process flow is as follows:

Designing of Paper Bag

Paper bag design is the key link in the production process. Good design attracts the customers and acts as a competitive advantage. Paper bag is designed according to need of the customer. The design differs depending upon the target market. Many businesses use paper bag as a marketing tool. The design of these bags must attract the customer and communicate the purpose of the product.

Figure 4: Different Designs of Paper Bag**Purchase of Raw Material**

Raw material used in paper bag manufacturing includes raw Kraft paper, raw bleach paper, thread, glue and ink. Raw material is purchased from the local market.

- **Raw Kraft Paper**

Kraft paper, produced from chemical pulp, has natural light brown color. It is used for manufacturing of Kraft paper bag.

Figure 5: Raw Kraft Paper

- **Raw Bleach Paper**

Kraft paper is bleached using different bleaching agents and other chemicals to whiten and purify the Kraft paper. The paper bag produced from raw bleach paper is stronger than the one produced from traditional brown Kraft paper. Because of this added strength, white bleach paper is heavily used in wrapping and packing. It is used for manufacturing of bleached card bag.

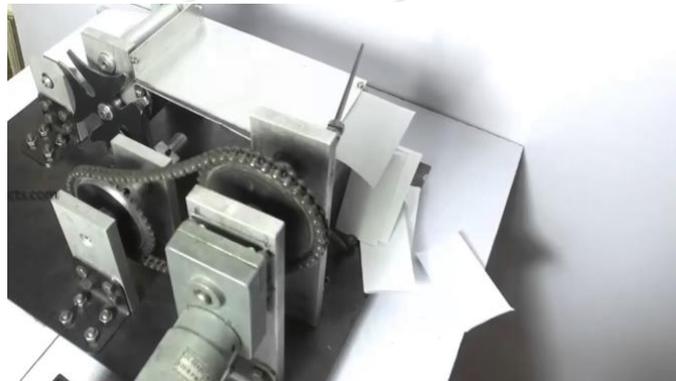
Figure 6: Raw Bleach Paper

- **Thread**

Thread grip is an essential part of the paper bag for holding it. A fine cotton thread is used as thread grip for paper bags. Figure 7 shows different types of threads which may be used in paper bags manufacturing.

Figure 7: Threads Design**Cutting**

In this step, the paper is cut in the required size through automated paper cutting machine. Paper cutting machines generally work the same way that commercial graphics cutters do, only on a smaller scale. Computerized image is entered into the machine, and the paper is automatically cut as per the specifications.

Figure 8: Cutting Machine

Printing

In the next step, the required images are printed on the paper using printing machine. For this purpose, two-color offset printing machine is used. Offset printing is widely used technique for commercial purposes. Offset simply means that the printing plate doesn't directly touch the final printed surface (the paper or whatever it might be); instead, an intermediate roller is used to transfer the printed image from one to the other. Offset printing offers the following benefits:

- High-quality printing
- Lower cost for high volume jobs
- Faster printing for high volume jobs
- Inexpensive printing plates

Average cost of two-color offset printing machine is around PKR 1.5-2.0 million.

Figure 9: Offset Printing Machine



Lamination

Lamination is the process of sandwiching paper between plastic layers and sealing them with heat and/or pressure. The purpose of lamination is to protect paper bags against damage and to maintain the quality and stability of colors. After printing, the paper is laminated through lamination machine.

Figure 10: Lamination Machine



Die Cutting

Die-cutting is a process whereby a die is used to cut through materials such as paper and card on a die press using die cutting machine. Different dies are used for Kraft paper bag, Bleach paper bag and Art card bag. Creating dies for each design is quite costly. However, it is a onetime cost which is recoverable in the long-term. Once a die is formed, it can be used multiple times on the press to produce large volumes of paper bags; making it cost effective for the business. The process allows to make an identical cut into material numerous times. This process offers high quality accuracy in design while producing large volume orders.

Figure 11: Die Cutting Machine



Folding

As the paper is cut into different sizes and shapes, the sides of the paper are folded manually according to the design set at the start of the process. After folding, the sides are glued manually and the paper bag structure is ready.

Figure 12: Paper Bag Folding Process



Thread Grip

Thread grip is an essential part of the paper bag for holding it. The thread is cut into the size and shapes according to the required design. Two threads of approximately 15 cm each are inserted to holes on both sides and knotted firmly. Finally the finished product is packed for shipment.

Figure 13: Final Product



Packing and Delivery

In the end, the paper bags are packed in the boxes to avoid damage and delivered to the customers.

5.2. Installed and Operational Capacities

The proposed manufacturing unit shall, at maximum capacity of 100%, will produce 5,600,000 units of paper bags annually. It is assumed that during the projected period of 10 years, the facility will continue to operate with 5% annual increase in capacity utilization each year. The unit would operate for 8 hours per day, working in one shift per day for 280 working days in a year.

Table 1 and Table 2 depict installed and operational capacities of proposed paper bag manufacturing unit.

Table 1: Daily Production Capacity

Process	Machine Name	Unit of Measurement	No .	Capacity per hour (A)	Per Day Working Hour (B)	Daily Production Capacity (C=A*B)
Cutting	Paper Cutting Machine	Paper Sheets	1	12,000	8	96,000
Printing	Printing Machine	Bags	1	2,500	8	20,000

	(2 Color)					
Lamination	Lamination Machine	Bags	1	1,625	8	13,000
Die Cutting	Die Cutting Machine	Bags	1	2,500	8	20,000

Table 2 provides details of machines' capacity.

Table 2: Installed and Operational Capacity

Process	Machine Name	Unit of measurement	No	Daily Production Capacity (A)	Annual Working Days (B)	Annual Installed Capacity
Cutting	Paper Cutting Machine	Paper Sheets	1	96,000	280	26,880,000
Printing	Printing Machine (2 Color)	Bags	1	20,000	280	5,600,000
Lamination	Lamination Machine	Bags	1	13,000	280	3,640,000
Die Cutting	Die Cutting Machine	Bags	1	20,000	280	5,600,000

Total installed and operational capacity of the proposed project is based on the capacities of the printing and die cutting machines; producing 5,600,000 units annually. Since this is the lowest capacity in the whole process, it acts as the bottleneck; making the total annual production capacity of the proposed unit as 5,600,000 bags. Lamination machine is used for only bleach paper bag and art card paper bag and thus the proposed project ignores the capacity of lamination machine for calculating the unit's total production capacity.

5.3. Bifurcation of Production Capacity (Product Wise)

Installed capacity and operational capacity of the proposed Paper Bag Products has been shown in Table 3.

Table 3: Product wise Installed and Operational Capacities Details

Paper Bag Type	Annual Processing Capacity of Die Cutting Machine (A)	Production Ratio ¹ (B)	Total Installed Capacity (Bags)(C=A*B)	Operational Capacity @ 55% ²
Kraft Bag	5,600,000	35%	1,960,000	1,078,000
Bleach Paper Bag		50%	2,800,000	1,540,000
Art Card Bag		15%	840,000	462,000
Total		100%	5,600,000	3,080,000

6. CRITICAL FACTORS

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

- Technical know-how and basic knowledge of the entrepreneur
- Production of a quality product, specific to user need and satisfaction
- Availability of specialized workforce
- Up-to-date knowledge of market needs and new technology
- Selection of appropriate machinery, technology and human resources
- Rigorous supervision of the production process at every level
- Ability to generate work orders through industrial networking (B2B and B2C)
- Assurance of timely order fulfillment
- Quality products and customer satisfaction
- Adapt to the rapid, social, economic and technological changes
- Increasing awareness among the masses on the environment friendly impact
- Attractive labeling and packaging

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The metropolitan cities of Lahore, Karachi, and Islamabad have good potential for investment in paper bag manufacturing unit. Other cities with sizeable shares of affluent population, such as Faisalabad, Gujranwala, Hyderabad, Peshawar, Quetta,

¹ Production ratio has been taken on the basis of the market demand for paper bags being proposed.

² This represents estimated capacity utilization per annum of all three proposed paper bag products i.e., "Kraft Paper Bags, Bleach Card Paper Bags and Art Card Bags"

Multan and sub-urban areas of all major cities of Pakistan also have potential for this investment.

Availability of skilled labor is vital while selecting a location. All the above-mentioned cities have adequate availability of skilled labor, raw material and other support infrastructure.

8. POTENTIAL TARGET MARKETS

The project's primary targets will be the stores using customized paper bags for products like garments, clothes, toys, stationery, jewelry, food beverages, drugs and appliances, etc.

With rising concerns regarding the safety of environment and marine animals, the demand for paper bags is increasing as more people are choosing eco-friendly packaging instead of polythene bags and the changing trends of shopping requires more fancy bags than traditional bags. Paper bags are 100% bio-degradable. Government is also running campaigns to replace plastic bags with paper bags. This factor may add other local retailers in the potential target market of paper bags.

9. PROJECT COST SUMMARY

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

The projected Income Statement, Cost of Goods Sold, 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.

The financial feasibility analysis given in Table 4 provides the information regarding projected IRR, NPV and payback period of the study based on 100% equity.

Table 4: Financial Feasibility Analysis

Description	Project
IRR	82%
NPV (PKR)	67,268,351
Payback Period (years)	2.07
Projection Years	10
Discount Rate used for NPV	15%

9.2. Financial Feasibility Debt Financing

Table 5 provides the information regarding projected IRR, NPV and payback period of the study based on combination of equity (50%) and debt (50%) financing for the proposed project.

Table 5: Financial Feasibility Debt Financing

Description	Project
IRR	81%
NPV (PKR)	75,206,285
Payback Period (years)	2.08
Projection Years	10
Discount Rate used for NPV	13%

9.3. Project Cost

Total cost of the project has been calculated to be PKR. 6,925,900. The project will be financed through 100% Equity. Table 6 provides the details of the costs calculated for the proposed manufacturing unit.

Table 6: Project Cost

Description of Costs	Amount (PKR)
Building / Infrastructure	502,360
Machinery & Equipment	2,600,000
Furniture & Fixtures	520,000
Office Equipment	745,000
Office Vehicles	80,800
Sesurity against building	300,000
Pre-operating Costs	492,995
Incorporation Costs	20,000
Total Capital Cost	5,261,155
Working Capital	
Equipment spare part inventory	30,158
Raw material inventory	995,586
Upfront building rent	100,000
Upfront insurance payment (% of Machinery)	39,000
Cash	500,000

Total Working Capital	1,664,745
Total Project Cost	6,925,900

9.3.1. Land

The Paper bag Manufacturing Unit will be established in a rented building to avoid the high cost of land. Suitable locations for setting up a manufacturing business 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 as 3,150 sq. ft.

The breakup of the space requirement is provided in Table 7.

Table 7: Breakup of Space Requirement

Break-up of Land Area	% Break-up	Area (Sq. Ft.)
Management building	20%	630
Factory	45%	1,418
Store	10%	315
Kitchen	5%	158
Washrooms	5%	158
Prayer Area	3%	95
Total Covered Area	88%	2,772
Parking + Pavement + Driveway	7%	220.5
Grounds	5%	157.5
Total Uncovered Area	12%	378
Total Area	100%	3,150

9.3.2. Building

There will be no cost of building since the unit will be started in a rented premise. However, there will be a renovation cost; required to make the building usable for the business. The proposed project requires electricity load of 12 KW for which an electricity connection under the General Supply Tariff-Commercial three phase will be required. Building rent of PKR 100,000 per month has been included in the operating cost. Building renovation cost is shown in Table 8.

Table 8: Building Renovation Cost

Cost Item	UOM	Total Liter / Area / Number	Cost/Unit/ Sq.feet (PKR)	Total Cost (PKR)
Paint Cost	Ltr	277	500	138500
Labour Cost	Feet	27,720	8	221,760
Wall Racks	Units	8	15,000	120,000
Curtains	Units	4	5,000	20,000
Blinds	Units	1	2,000	2,000
Total				502,260

9.3.3. Machinery and Equipment Requirement

Table 9 provides details of machinery and equipment required for the project.

Table 9: Machinery and Equipment Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Paper Cutting Machine	1	300,000	300,000
Printing Machine	1	1,500,000	1,500,000
Lamination Machine	1	300,000	300,000
Die Cutting Machine	1	500,000	500,000
Total Cost (PKR)			2,600,000

9.3.4. Furniture & Fixtures Requirement

Table 10 provides details of the furniture and fixture requirement of the project.

Table 10: Furniture and Fixtures Requirement

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Office Tables	3	25,000	75,000
Executive Tables	2	30,000	60,000
Executive Chairs	2	20,000	40,000
Sofa Sets	2	35,000	70,000
Office Chairs	6	10,000	60,000
Guest Tables	1	15,000	15,000
Racks	10	10,000	100,000
Interiors and Decorations			100,000
Total			520,000

9.3.5. Office Equipment Requirement

Details of office equipment required for the project is provided in Table 11.

Table 11: Office Equipment Requirement

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Air Conditioners	3	90,000	270,000
Water Dispenser / Water Cooler	2	20,000	40,000
Laptop	2	80,000	160,000
Printer	1	40,000	40,000
Desktop	1	30,000	30,000
Security System	1	28,000	28,000
LCD	1	40,000	40,000
Ceiling Fan	15	5,000	75,000
Exhaust Fan	4	8,000	32,000
Water Pump (1.5 HP)	2	15,000	30,000
Total			745,000

9.3.6. Office Vehicle Requirement

Details of office vehicle required for the project is provided in Table 12.

Table 12: Office Vehicle Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Registration fee @ 1%	Total Cost (PKR)
Motor Cycle	1	80,000	800	80,800
Total Cost				80,800

9.3.7. Licenses Permits and Registration

Details of licenses, permits and registration requirement for the project are provided in Table 13. It is required for establishment of printing press to obtain one time licensing requirement.

Table 13: Licenses, Permits, and Registration

Cost Item	Unit Cost (PKR)	Total Cost (PKR)
Declaration for setup of Printing Press from Government of Punjab	20,000	20,000
Total Cost		20,000

9.3.8. Pre-Operating Cost

Details of pre-operating cost for the project are provided in Table 14.

Table 14: Pre-Operating Cost

Cost Item	Number of Months	Unit Cost/ Month (PKR)	Total Cost (PKR)
Staff Salaries	1	420,000	420,000
Utilities Bill		73,407	72,995
Total Cost			492,995

9.3.9. Security against Building Rent

Details of pre-operating cost for the project are provided in Table 15.

Table 15: Security against Building Rent

Cost Item	Months	Unit Cos/Month (PKR)	Total Cost (PKR)
Security against Building Rent	3	100,000	300,000
Total			300,000

9.3.10. Breakeven Analysis

Breakeven analysis is provided in Table 16.

Table 16: Breakeven Analysis

Particulars	Amount First Year (PKR)	Ratio
Sales (PKR) – A	66,197,542	100%
Variable Cost (PKR) – B	57,738,256	87%
Contribution (PKR) (A-B) = C	8,459,286	13%
Fixed Cost (PKR) – D	5,754,612	9%

Contribution Margin CM=(C/A)		13%
Break Even Revenue (D/CM) =E	45,032,309	
Breakeven Units	2,051,586	
Breakeven Capacity	67%	

9.3.11. Revenue Generation

Based on the 55% capacity utilization of the unit, sales revenue during the first year of operations is estimated in Table 17.

Table 17: Revenue Generation

Product	Production @ 55% Initial Capacity (Units)(A)	Inventory (0.25 Months) (B) (Units)	Sale (Units)	Sale Price Per Unit (B)	Total Revenue (PKR)– (A*B)=D
Kraft Bag	1,078,000	22,458	1,055,542	12	12,666,500
Bleach Paper Bag	1,540,000	32,083	1,507,917	25	37,697,917
Art Card Bag	462,000	9,625	452,375	35	15,833,125
Total			3,015,833		66,197,542

9.3.12. Variable Cost Estimate

Variable costs of the project have been provided in detail in Table 18.

Table 18: Variable Cost Estimate

Variable Cost	Cost (PKR)
Cost of goods sold 2 (Raw Material Cost)	47,788,141
Operation costs 1 (Direct Labor)	8,753,750
Operating costs 2 (Machinery Maintenance)	180,950
Operating costs 3 (Utilities)	637,414
Water Expenses	54,000
Travelling expense	108,000
Office vehicles running expense	81,000
Office expenses (stationery, entertainment, janitorial services, etc.)	135,000
Total Variable Cost	57,738,255

9.3.13. Raw Material Cost

Table 19 provides detail of raw material cost used in manufacturing of craft paper.

Table 19: Raw material Cost- Kraft Paper

Description of Costs	Price Per Rim/KG (PKR)(A)	Number of Bags Per Rim (B)	Wastage ³ @ 5 %(PKR) (C)	Per Unit Cost (PKR) (D=A-C/B)
Raw Kraft Paper (Rim)	2,500	500	15	4.97
Glue (Kg)	500	1,000		0.5
Thread (Kg)	900	900		1
Printing Cost (Kg)	5,000	40,000		0.125
Total Per Unit Cost				6.595
Total Units sold				1,055,542
Cost of Sale-Kraft Paper				6,961,297

Table 20 provides detail of raw material cost used in manufacturing of Bleach Card paper.

Table 20: Raw material Cost- Bleach Card Paper

Description of Costs	Price Per Sq. feet /KG (PKR)(A)	Number of Bags Per Unit (B)	Wastage (PKR) (C)	Per Unit Cost (PKR) (D=A-C/B)
Raw Bleach Paper (KG)	115	8	1	14.25
Glue (KG)	500	1,000		0.5
Thread (KG)	900	900		1
Printing Cost – Ink (KG)	5,000	8,000		0.63
Lamination (Sq. feet)	1	0.5		2
Total Per Unit Cost				18.38
Total Units sold				1,507,917
Cost of Sale-Bleach Card Paper				27,707,969

³ The accounting/costing practices guides treatments of revenue from wastage or by-product as;
1st, subtract revenue of by-product or wastage from cost of main product, or
2nd, show revenue from by-product/wastage as other income.
Here, revenue from wastage reduced the cost of main product

Table 21 provides detail of raw material cost used in manufacturing of Art Card paper.

Table 21: Raw material Cost- Art Card Paper

Description of Costs	Price Per Sq. feet /KG (PKR)(A)	Number of Bags Per Unit (B)	Wastage (PKR) (C)	Per Unit Cost (PKR) (D=A-C/B)
Raw Bleach Paper (KG)	200	8	1	24.9
Glue (KG)	500	1,000		0.5
Thread (KG)	900	900		1.0
Printing Cost – Ink (KG)	5,000	8,000		0.6
Lamination (Sq. feet)	1	0.5		2.0
Total Per Unit Cost				29
Total Units sold				452,375
Cost of Sale-Art Card Paper				13,118,875

Table 22 provides detail of raw material cost provided in cost of goods sold.

Table 22: Raw material Cost

Product	Cost (PKR)
Kraft Paper	6,961,297
Bleach Card Paper	27,707,969
Art Card Paper	13,118,875
Cost of Sale-Kraft Paper	47,788,141

9.3.14. Fixed Cost Estimate

Table 23 provides details of fixed cost for the project.

Table 23: Fixed Cost Estimate

Fixed Cost	Cost (PKR)
Administration expense	2,700,000
Administration benefits expense	116,400
Building rental expense	1,200,000
Utilities	238,532

Communications expense (phone, fax, mail, internet, etc.)	54,000
Promotional expense	330,988
Insurance expense	39,000
Depreciation expense	642,106
Amortization of pre-operating costs	98,599
Amortization of legal, licensing, and training costs	4,000
Bad Debt Expense	330,988
Total	5,754,613

9.3.15. Human Resource Requirement

For the 1st year of operations, the Paper Bag Manufacturing Unit shall require the workforce at a salary cost as projected in Table 24.

Table 24: Human Resource Requirement

Designation	No of Persons	Average Monthly Salary (PKR)	Total Salary (PKR)
CEO	1	150,000	150,000
Production Supervisor	1	80,000	960,000
Designer - Skilled	1	45,000	540,000
Procurement Officer	1	35,000	420,000
Cutting Machine Operator	1	25,000	300,000
Printing Machine Operator - Skilled	1	30,000	360,000
Printing Helper	1	20,000	240,000
Die Cutting Machine Operator	1	25,000	300,000
Lamination Machine Operator	1	25,000	300,000
Folding / Patching worker	5	20,000	2,400,000
Thread Grip Labor-Unskilled	5	20,000	2,400,000
Foreman	2	30,000	720,000
Accounts/Admin Officer	1	35,000	420,000
Security Officer	1	20,000	240,000
Office Boy	1	20,000	240,000
Total	24		9,990,000

10. CONTACT DETAILS

Details of suppliers of Machinery and Equipment are provided in Table 25.

Table 25: Contact Details of Suppliers

Cost Item	Origin	Supplier Name	Contact Details	Email	Website
Paper Cutting Machine	Pakistan	Universal Engineering Works	923249431198	uwpak@gmail.com	www.universaleengineeringwork.com
Printing Machine	India	S Mark Engineers	918048602985		www.smarkeng.com
Lamination Machine	China	Ruian Lixin Printing Machinery Co., Ltd	86133 53373121	wing@sanlinmach.com	www.lixinmach.com
Die Cutting Machine	Pakistan	Prime Mechanical Works (PVT) Ltd	9242359230249 2423592302592 3008443167	info@primemachines.net	www.primemachines.net

11. USEFUL LINKS

Table 26: Useful 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
Punjab small industries corporation	www.psic.gov.pk
Global Source Products	www.globalsources.com
Fortune business Insights	https://www.fortunebusinessinsights.com/electric-e-bike-market-102022

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	66,197,542	80,375,852	96,913,183	116,161,632	138,522,746	164,454,204	194,477,375	229,185,867	255,083,869	283,908,347
<i>Cost of sales</i>										
Cost of goods sold 1 (Material Cost)	47,788,141	58,023,492	69,961,825	83,857,320	99,999,854	118,719,827	140,393,616	165,449,747	184,145,568	204,954,017
Operation costs 1 (Direct Labor)	8,753,750	9,392,774	10,078,446	10,814,173	11,603,607	12,450,671	13,359,570	14,334,818	15,381,260	16,504,092
Operating costs 1 (Machinery Maintenance)	180,950	211,218	244,837	282,127	323,439	369,152	419,679	475,472	508,755	544,368
Operating costs 2 (Utilities)	637,414	693,506	754,534	820,933	893,176	971,775	1,057,291	1,150,333	1,251,562	1,361,700
Total cost of sales	57,360,255	68,320,990	81,039,643	95,774,554	112,820,076	132,511,425	155,230,156	181,410,370	201,287,145	223,364,177
Gross Profit	8,837,287	12,054,862	15,873,540	20,387,078	25,702,670	31,942,780	39,247,219	47,775,496	53,796,724	60,544,170
<i>General administration & selling expenses</i>										
Administration expense	2,700,000	2,897,100	3,108,588	3,335,515	3,579,008	3,840,275	4,120,616	4,421,420	4,744,184	5,090,510
Administration benefits expense	116,400	124,897	134,015	143,798	154,295	165,559	177,644	190,612	204,527	219,458
Building rental expense	1,200,000	1,320,000	1,452,000	1,597,200	1,756,920	1,932,612	2,125,873	2,338,461	2,572,307	2,829,537
Water expense	54,000	63,041	73,595	85,917	100,302	117,095	136,699	159,586	186,304	217,496
Utilities	238,532	259,523	282,361	307,208	334,243	363,656	395,658	430,476	468,357	509,573
Travelling expense	108,000	115,884	124,344	133,421	143,160	153,611	164,825	176,857	189,767	203,620
Communications expense (phone, fax, mail, internet, etc.)	54,000	57,942	62,172	66,710	71,580	76,806	82,412	88,428	94,884	101,810
Office vehicles running expense	81,000	90,153	100,340	111,679	124,298	138,344	153,977	171,685	191,816	214,720
Office expenses (stationery, entertainment, janitorial services, etc)	135,000	144,855	155,429	166,776	178,950	192,014	206,031	221,071	237,209	254,525
Promotional expense	330,988	401,879	484,566	580,808	692,614	822,271	972,387	1,145,929	1,275,419	1,419,542
Insurance expense	39,000	33,150	27,300	21,450	15,600	9,750	3,900	66,839	56,813	46,787
Depreciation expense	642,106	642,106	642,106	642,106	642,106	642,106	444,816	934,838	934,838	934,838
Amortization of pre-operating costs	98,599	98,599	98,599	98,599	98,599	-	-	-	-	-
Amortization of legal, licensing, and training costs	4,000	4,000	4,000	4,000	4,000	-	-	-	-	-
Bad debt expense	330,988	401,879	484,566	580,808	692,614	822,271	972,387	1,145,929	1,275,419	1,419,542
Subtotal	6,132,612	6,655,008	7,233,981	7,875,995	8,588,289	9,276,369	9,957,224	10,692,023	11,467,446	12,287,064
Operating Income	2,704,675	5,399,854	8,639,559	12,511,083	17,114,381	22,666,411	29,289,995	37,083,473	45,329,278	54,257,106
Other income (interest on cash)	40,428	108,065	224,686	366,322	533,570	725,920	1,382,114	2,659,452	4,240,600	6,356,851
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	650,000	-	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	186,250	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	20,200	-	-	-
Earnings Before Interest & Taxes	2,745,103	5,507,918	8,864,246	12,877,405	17,647,950	23,392,331	31,528,559	39,843,125	49,575,278	60,613,957
Earnings Before Tax	2,745,103	5,507,918	8,864,246	12,877,405	17,647,950	23,392,331	31,528,559	39,843,125	49,575,278	60,613,957
Tax	827,469	1,004,698	1,211,415	1,452,020	1,731,534	2,055,678	2,430,967	2,864,823	3,188,548	3,548,854
NET PROFIT/(LOSS) AFTER TAX	1,917,633	4,503,220	7,652,831	11,425,385	15,916,416	21,336,653	29,097,592	29,374,103	34,956,229	41,587,677

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	500,000	1,117,110	3,205,470	5,781,989	8,870,893	12,471,890	16,564,916	38,719,643	67,658,452	101,965,538	152,308,490
Accounts receivable		906,816	1,003,927	1,214,308	1,459,417	1,744,414	2,075,185	2,458,435	2,901,803	3,316,916	3,691,728
Finished goods inventory		1,220,431	1,453,638	1,724,248	2,037,756	2,400,427	2,819,392	3,302,769	3,859,795	4,282,705	4,752,429
Equipment spare part inventory	30,158	38,019	47,596	59,233	73,339	90,401	110,996	135,813	156,945	181,366	-
Raw material inventory	995,586	1,293,440	1,668,735	2,140,184	2,730,821	3,468,973	4,389,437	5,534,920	6,591,591	7,849,992	-
Pre-paid building rent	100,000	110,000	121,000	133,100	146,410	161,051	177,156	194,872	214,359	235,795	-
Pre-paid insurance	39,000	33,150	27,300	21,450	15,600	9,750	3,900	66,839	56,813	46,787	-
Total Current Assets	1,664,745	4,718,966	7,527,667	11,074,513	15,334,236	20,346,906	26,140,982	50,413,291	81,439,759	117,879,098	160,752,647
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	502,360	452,124	401,888	351,652	301,416	251,180	200,944	150,708	100,472	50,236	-
Machinery & equipment	2,600,000	2,210,000	1,820,000	1,430,000	1,040,000	650,000	260,000	4,455,943	3,787,552	3,119,160	2,450,769
Furniture & fixtures	520,000	442,000	364,000	286,000	208,000	130,000	52,000	-	-	-	-
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	745,000	633,250	521,500	409,750	298,000	186,250	74,500	1,276,799	1,085,279	893,759	702,239
Security against building	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
Total Fixed Assets	4,748,160	4,106,054	3,463,948	2,821,842	2,179,736	1,537,630	895,524	6,348,056	5,413,218	4,478,379	3,543,541
<i>Intangible assets</i>											
Pre-operation costs	492,995	394,396	295,797	197,198	98,599	-	-	-	-	-	-
Legal, licensing, & training costs	20,000	16,000	12,000	8,000	4,000	-	-	-	-	-	-
Total Intangible Assets	512,995	410,396	307,797	205,198	102,599	-	-	-	-	-	-
TOTAL ASSETS	6,925,900	9,235,417	11,299,413	14,101,553	17,616,571	21,884,536	27,036,506	56,761,347	86,852,976	122,357,478	164,296,188
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		1,350,700	1,642,494	1,983,728	2,382,017	2,846,100	3,386,011	4,013,261	4,730,788	5,279,060	5,630,093
Total Current Liabilities	-	1,350,700	1,642,494	1,983,728	2,382,017	2,846,100	3,386,011	4,013,261	4,730,788	5,279,060	5,630,093
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	6,925,900	6,925,900	6,925,900	6,925,900	6,925,900	6,925,900	6,925,900	6,925,900	6,925,900	6,925,900	6,925,900
Retained earnings		958,817	2,731,018	5,191,925	8,308,655	12,112,535	16,724,594	45,822,186	75,196,289	110,152,518	151,740,195
Total Equity	6,925,900	7,884,717	9,656,918	12,117,825	15,234,555	19,038,435	23,650,494	52,748,086	82,122,189	117,078,418	158,666,095
TOTAL CAPITAL AND LIABILITIES	6,925,900	9,235,417	11,299,413	14,101,553	17,616,571	21,884,536	27,036,506	56,761,347	86,852,976	122,357,478	164,296,188

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		1,917,633	4,503,220	7,652,831	11,425,385	15,916,416	21,336,653	29,097,592	29,374,103	34,956,229	41,587,677
Add: depreciation expense		642,106	642,106	642,106	642,106	642,106	642,106	444,816	934,838	934,838	934,838
amortization of pre-operating costs		98,599	98,599	98,599	98,599	98,599	-	-	-	-	-
amortization of training costs		4,000	4,000	4,000	4,000	4,000	-	-	-	-	-
Accounts receivable		(906,816)	(97,112)	(210,381)	(245,108)	(284,997)	(330,771)	(383,251)	(443,368)	(415,113)	(374,812)
Finished goods inventory		(1,220,431)	(233,207)	(270,610)	(313,509)	(362,671)	(418,965)	(483,377)	(557,026)	(422,910)	(469,724)
Equipment inventory	(30,158)	(7,861)	(9,577)	(11,637)	(14,106)	(17,062)	(20,596)	(24,816)	(21,132)	(24,421)	181,366
Raw material inventory	(995,586)	(297,854)	(375,295)	(471,449)	(590,637)	(738,152)	(920,464)	(1,145,483)	(1,056,671)	(1,258,401)	7,849,992
Pre-paid building rent	(100,000)	(10,000)	(11,000)	(12,100)	(13,310)	(14,641)	(16,105)	(17,716)	(19,487)	(21,436)	235,795
Advance insurance premium	(39,000)	5,850	5,850	5,850	5,850	5,850	5,850	(62,939)	10,026	10,026	46,787
Accounts payable		1,350,700	291,794	341,234	398,288	464,084	539,911	627,250	717,527	548,272	351,033
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(1,164,745)	1,575,927	4,819,379	7,768,444	11,397,558	15,713,533	20,817,620	28,052,075	28,938,809	34,307,085	50,342,952
<i>Financing activities</i>											
Issuance of shares	6,925,900	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	6,925,900	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(5,261,155)	-	-	-	-	-	-	(5,897,348)	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing activities	(5,261,155)	-	-	-	-	-	-	(5,897,348)	-	-	-
NET CASH	500,000	1,575,927	4,819,379	7,768,444	11,397,558	15,713,533	20,817,620	22,154,728	28,938,809	34,307,085	50,342,952

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 27: Operating Cost Assumptions

Description	Details
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%

13.2. Production Cost Assumptions

Table 28: Production Cost Assumptions

Description	Details
Cost of goods sold 1 - Kraft Bag	6.60
Cost of goods sold 1 - Bleach Card Bag	18.38
Cost of goods sold 1 - Art Card Bag	29.00
Cost of goods sold growth rate	11.3%
Operating costs 1 (Machinery Maintenance)	0.06

13.3. Revenue Assumptions

Table 29: Revenue Assumptions

Description	Details
Sale price growth rate	11.3%
Initial capacity utilization	55%
Capacity growth rate	5%
Maximum capacity utilization	90%

13.4. Financial Assumptions

Table 30: Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate used for NPV	15%
Discount Rate (50:50 Debt/Equity)	13%

13.5. Cash Flow Assumptions

Table 31: Cash Flow Assumptions

Description	Details
Accounts receivable cycle (in days)	5
Accounts payable cycle (in days)	10

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
3 rd 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	5 TH 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