
Pre-feasibility Study

Motorcycle Chain Manufacturing Unit



Small and Medium Enterprises Development Authority
Government of Pakistan
www.smeda.org.pk

HEAD OFFICE

4th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road, Lahore
Tel (042) 111 111 456, Fax: (042) 36304926-7

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KHYBER PAKTUNKHWA	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) 35610572 helpdesk-khi@smeda.org.pk	Ground Floor State Life Building The Mall, Peshawar. Tel: (091)111 111 456,9213046-7 Fax: (091) 5286908 helpdesk-pew@smeda.org.pk	Bungalow No. 15-A Chamn Housing Scheme Airport Road, Quetta. Tel: (081) 2831623, 2831702 Fax: (081) 2831922 helpdesk-qta@smeda.org.pk

January 2023

DISCLAIMER

The purpose and scope of this information memorandum is to introduce the subject matter and provide a general idea and information on the said area. All the material included in this document is based on data / information provided by the Entrepreneur and gathered from various sources and is based on certain assumptions. 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 does not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information he / she feels necessary for making an informed decision.

For more information on services offered by SMEDA, please contact our website: www.smeda.org.pk

Document Control

Document No.	264
Prepared by	SMEDA-Punjab
Revision Date	January 2023
For information	helpdesk.punjab@smeda.org.pk

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	3
2	INTRODUCTION TO SMEDA	4
3	PURPOSE OF THE DOCUMENT	4
4	BRIEF DESCRIPTION OF PROJECT & PRODUCTS	5
4.1	PRODUCTION PROCESS FLOW	7
4.2	INSTALLED AND OPERATIONAL CAPACITIES	9
5	CRITICAL FACTORS	9
6	GEOGRAPHICAL POTENTIAL FOR INVESTMENT	9
7	POTENTIAL TARGET CUSTOMERS / MARKETS	10
8	PROJECT COST SUMMARY	10
8.1	PROJECT ECONOMICS	10
8.2	PROJECT FINANCING	10
8.3	PROJECT COST	11
8.4	SPACE REQUIREMENT	11
8.5	MACHINERY & EQUIPMENT REQUIREMENT	12
8.6	FURNITURE & FIXTURES REQUIREMENT	13
8.7	OFFICE EQUIPMENT REQUIREMENT	13
8.8	OFFICE VEHICLE REQUIREMENT	14
8.9	HUMAN RESOURCE REQUIREMENT	14
8.10	RAW MATERIAL REQUIREMENT	14
8.11	UTILITIES AND OTHER COSTS	15
8.12	REVENUE GENERATION	15
9	ANNEXURES	16
9.1	INCOME STATEMENT	16
9.2	BALANCE SHEET	17
9.3	CASH FLOW STATEMENT	18
10	KEY ASSUMPTIONS	19
10.1	OPERATING COST ASSUMPTIONS	19
10.2	PRODUCTION COST ASSUMPTIONS	19
10.3	REVENUE ASSUMPTIONS	19

1 EXECUTIVE SUMMARY

Motorcycles are a popular mode of transportation due to modern lifestyles, requiring regular maintenance such as tuning, changing fluids, and other parts. There are two types of motorcycles exist in Pakistan, 2-wheelers with engine capacities of 70 CC, 100 CC, and 125 CC and more and 3-wheelers with 150 CC engine capacity or more. The sale of 2 and 3-wheelers has steadily increased in Pakistan, creating demand for replacement of brake fluid, brake shoe, drum rubber, timing chain, head repairing, clutch & pressure plates, engine overhaul, wheel balance, electric work and chain gear set (sprocket).

The proposed pre-feasibility study is to establish a Roller Chain Manufacturing Unit, with a capacity to produce chains for 70 CC, 100 CC, 125 CC, and 3-wheel bikes. A Chain Gear Set, or sprocket, is a toothed wheel that meshes with a chain and is used to transmit rotary or linear motion in bicycles, motorcycles, and other machinery. Unlike gears, sprockets are not meshed directly and differ from pulleys in that they have teeth. Sprockets will be outsourced to complete the Chain Gear Set.

The installed capacity of the machinery in the unit is 60,000 chains per month. This includes 40% of the chains for 70 CC bikes, which amounts to 24,000 chains per month, 10% for 100 CC bikes (i.e. 6,000 per month), 20% for 125 CC bikes (i.e. 12,000 per month), and 30% for 3-wheelers (i.e. 18,000 per month). The initial year's capacity is assumed to be 60%, with a 5% increase in each subsequent year, reaching a maximum production capacity of 80% in year 5.

The Unit will be set up on 8 Kanal purchased land in any developed industrial area. The project requires a total investment of Rs. 247.13 million. This includes capital investment of Rs. 187.98 million and working capital of Rs. 59.15 million. This project is financed through 100% equity. The Net Present Value (NPV) of project is Rs. 447.69 million with an Internal Rate of Return (IRR) of 39% and a Payback period of 3.84 years. The proposed project will achieve its estimated breakeven point at capacity of 53% (379,136 Chain Gear Sets) with breakeven revenue of Rs. 212.99 million.

2 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.

3 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 "Motorcycle Chain 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.

4 BRIEF DESCRIPTION OF PROJECT & PRODUCTS

This document provides details for setting up a Motorcycle Chain Manufacturing Unit. Motorcycle is the most commonly used economical mode of commuting in urban and rural areas. There are two types of motorcycles that are as following:

2-Wheeler Motorcycle:

2-wheels motorcycle is a vehicle used to transport people from one place to another like that of a bicycle, but is operated by an engine which runs on petrol. In the daily life of common man, motorcycle plays an important role in traveling from one place to another. Common motor bikes in Pakistan are with 70 CC, 100 CC and 125 CC engine capacity.



3-Wheeler Motorcycle

3-wheels motorcycle (Motorcycle Rickshaw) is also a Pakistan traditional vehicle used for transportation and also operated by an engine which runs on petrol. It is used for providing transportation and travelling services to passengers in routine days of life. Normally these 3-Wheels Motorcycles have 150 CC engine capacity.



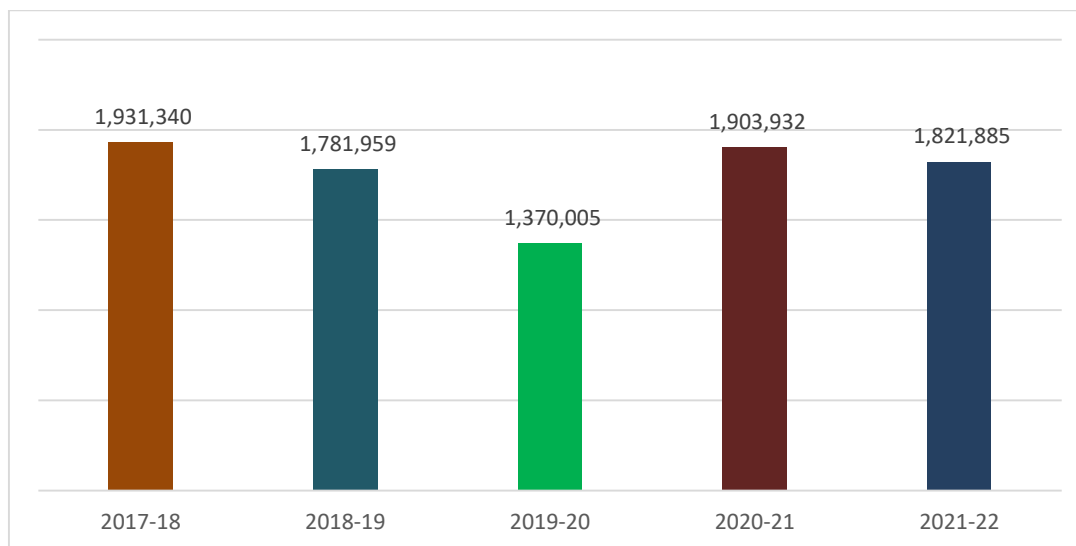
Routine use of motorcycle requires the owner to carry out its maintenance on regular basis, which may include tuning, change of engine oil and brake fluid, brake shoe and drum rubber, timing chain, head repairing, clutch & pressure plates, engine overhaul, wheel balance, electric work and chain gear set (sprocket).

Motorcycle has become a common mode of conveyance as a result of modern life style. As the population is rapidly increasing day by day, the demand of motorcycles is also increasing. As such, there is a demand for motorcycle chains to meet the requirement of replacement market as well as for supply to the O.E.M. units. Therefore, there is a great potential for this item and considerable scope to set up new units in this line.

According to the data of Pakistan Automotive Manufacturers Association (PAMA), there

is a steady rise in domestic production of 2/3 wheelers vehicles in Pakistan. During the last 5 years, the sale of motorcycles and 3-wheelers have increased and observed average annual increase of 4%.¹ The detail can be seen in the following graph.

Figure 1: Sale of 2 Wheeler and 3 Wheelers Vehicles in Pakistan



There are two formal business models in repair service industry known as 3S and 2S business models. In 3S model, the business sells new vehicles and thus offers 'Sales', Spares and Services (repair) to its customers. These types of units normally work directly under the motorcycle manufacturing companies. The 2S business model provides Spares and Repair services to its customers. Both 3S and 2S business models hire trained staff for providing repair and maintenance repair services.

The proposed Pre-feasibility study is to establish a Roller Chain Manufacturing Unit. The unit has capacity to produce Roller Chains for 70 CC, 100 CC, 125 CC and 3-wheels bikes (Rikshaw). Chain is an important link to transfer power from engine of a motorcycle to the rear driving wheel through sprockets. Automotive chains are of different sizes based upon the power to be transmitted. Large and Small Sprockets will be outsourced under a particular brand name in order to complete the Chain Gear Set.

Chain Gear Set (Sprocket)

Chain Gear Set (Sprocket) is a profiled wheel with teeth that mesh with a chain. The name 'sprocket' applies generally to any wheel upon which radial projections engage a chain passing over it. It is distinguished from a gear in that sprockets are never meshed together

¹ <https://www.pama.org.pk/annual-sales-production/>

directly and differs from a pulley in that sprockets have teeth and pulleys are smooth except for timing pulleys used with toothed belts. Sprockets are used in bicycles, motorcycles and other machineries, either to transmit rotary motion between two shafts where gears are unsuitable or to impart linear motion to a track, tape, etc.

Chain's wear and stretch causes grouping and excessive wear and tear to the sprocket. Poor sprocket alignment creates heat and may even bend the shafts on the drive system, causing great damage.



4.1 Production Process Flow

The design of a roller chain is quite simple and consists of 5 components. These 5 individual components used to make roller chain are pins, bushings, rollers, inner plates and outer plates. Each component is used to produce sub-assemblies, which creates the final product. Below are breakdowns of each chain component with a description that explains the purpose of each part. The overall components and construction is the same for majority of roller chain in the power transmission market.

Outer Plate: Outer and inner link blank are cut from cold rolled steel strips on S.P.M. with progressive die sets. Outer plates are combined with the pins to form what is known as a pin link or riveting link. The outer link plates take the brunt of a chains shock load.

Inner Link Plate: Inner link plates hold the bushing and the roller to form a "roller link". Inner link plates also go through the same special hardening & shot peening processes as the outer link plates.

Pin: Roller chain pins hold the entire roller chain together by connecting roller links together. The pins are the main "bearing" point where the roller links. The bearing point is where the chain flexes/pivots when running around a sprocket. Pins are a very critical component and Nitro use special pins with precision heat treatment for increased strength and wear resistance.

Roller: Rollers are the part that rides on the sprocket teeth. The rollers do take a moderate impact especially when the drive is initially started. The rollers are consistently contacting the sprocket teeth (metal-to-metal contact), so strength and wear resistance is needed. All Nitro roller chain uses solid rollers to prevent distortion and they also undergo special manufacturing processes for wear resistance.

Bushing: The bushing is located between the pin & roller, which takes impact loads from both sides. Bushings are also heat treated and shot peened for increased strength & fatigue resistance. Bushings are available in split or solid construction.

Chain Sub-Assemblies:

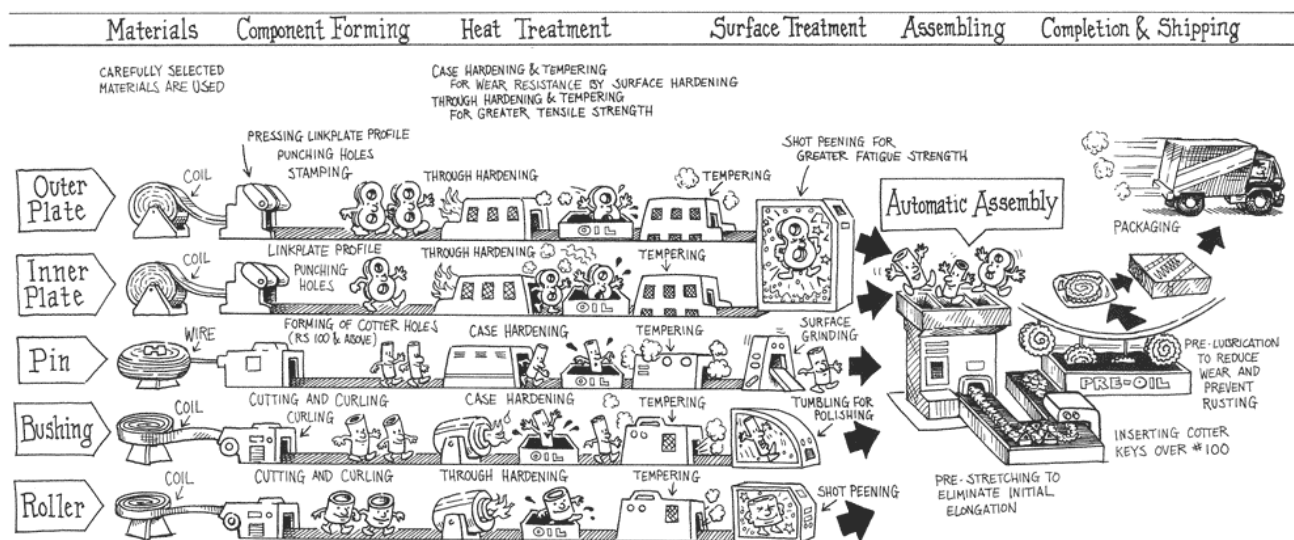
The sub-assemblies are made from the individual chain components mentioned above. The sub-assemblies are used to make the roller chain.

Roller Link - Inner Link: Roller links are the inner link of a roller chain that are made using the inner plates, bushings & rollers.

Riveting Link - Pin Link: Riveting Links are made from the pins and outer link plates. These links are used between each roller link to form a roller chain. The pins and outer plates are pressed to form a solid connection.

The complete production process is explained in the following figure in detail.

Figure 2: Roller Chain Manufacturing Process



4.2 Installed and Operational Capacities

As per the machinery employed, the installed capacity of the unit is to manufacture 60,000 chains per month based on 8 hours shift. However, in the first year of the operations, it will operate on 60% of its installed capacity. Maximum Production Capacity will be achieved in in year 5 (i.e. 80%). Product mix of the unit is given in the table below:

Table 1: Annual Installed and Operational Capacities (No. of Chains)

Description – Chain for	Annual Installed Capacity (# of units)	Operational Capacity - Year 1 (60%) (# of units)	Maximum Operational Capacity (80%) (# of units)
70 CC Bike	288,000	172,800	230,400
100 CC Bike	72,000	43,200	57,600
125 CC Bike	144,000	86,400	115,200
Rikshaw	216,000	129,600	172,800
Total	720,000	432,000	576,000

5 CRITICAL FACTORS

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

- Technical knowhow and basic knowledge of the entrepreneur
- Availability of high-quality raw material at economical cost
- Availability of skilled workforce
- Rigorous supervision of the process at every level
- Market intelligence is also very critical as ‘know how’ about new technology in the industry helps make accurate and confident decision-making
- Effective marketing and distribution of the product is essential for the business

6 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The demand for setting up the manufacturing unit for Motorcycle Chains will be higher in large cities. Majority of manufacturing units of vehicles are located in the big cities of Pakistan. Therefore, the geographical potential for investment in this business is higher in big cities like Karachi, Lahore, Islamabad, Peshawar, Rawalpindi, Quetta, Faisalabad, Sialkot, Hyderabad, Gujranwala, Multan, Mardan, Sukkur or any other major city.

7 POTENTIAL TARGET CUSTOMERS / MARKETS

Following are the potential target customers of the proposed business:

- Assembling/manufacturing units of automobiles especially Motorcycles and Rikshaw Manufacturing Units will be major customers of the products of the proposed manufacturing business.
- Motorcycles and Rikshaw Repairing Workshops
- Traders of Motorcycles and Rikshaw Spare Parts

8 PROJECT COST SUMMARY

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

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

8.1 Project Economics

The capacity utilization during year one is worked out at 60% with 5% increase in subsequent years up to the maximum capacity utilization of 80%.

The following table shows internal rate of return, payback period and net present value of the proposed unit.

Table 3: Project Economics

Description	Details
Internal Rate of Return (IRR)	39%
Payback Period (Years)	3.84
Net Present Value	Rs. 447,687,402

8.2 Project Financing

Project will be financed through 100% equity.

8.3 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business.

Table 5: Project Cost

Description	Amount Rs.
Land	17,000,000
Building/Infrastructure	61,896,830
Machinery & equipment	101,061,856
Furniture & fixtures	1,183,700
Office vehicles	3,741,525
Office equipment	1,541,500
Pre-operating costs*	1,552,000
Total Capital Costs	187,977,411
Working Capital	
Equipment spare part inventory	82,500
Raw material inventory	54,616,617
Cash	4,451,956
Total Working Capital	59,151,073
Total Investment	247,128,484

* It includes the Electricity and water Connection charges.

8.4 Space Requirement

The space requirement for the proposed unit is estimated considering various facilities including management office, production hall, storage, open space, etc. Total 1 acre of land would be required for establishing this unit whose cost is estimated at Rs. 17 million². The land will be purchased in any developed Industrial Area in order to avail the utility connection facilities and other infrastructure. Details of space requirement and cost related to land & building is given below;

Table 6: Space Requirement

Description	Area (Sq.ft.)	Unit Cost (Rs.)	Total Cost (Rs.)
Management building	1,125	3,500	3,937,500
Production Facility	18,000	2,000	36,000,000
Warehouse	6,000	2,000	12,000,000

² The price of land is taken from Bhalwal Industrial Estate; however, please note that the land price may be subject to change based on the specific Industrial Estate/place on which the project will be installed.

Quality Lab and Cafeteria	1,300	2,500	3,250,000
Mosque	500	2,500	1,250,000
Pavement/driveway	1,350	350	472,500
Grounds	15,205	100	1,520,500
Electric Control Room	80	1,500	120,000
Boundary Wall & Main Gate	835 (Run. ft.)	2,200	1,836,651
Design Cost			1,509,679
Total Infrastructure			61,896,830

8.5 Machinery & Equipment Requirement

Plant, machinery and equipment required for the proposed project are stated below:

Table 7: Machinery & Equipment Requirement

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
150 Ton Press	1		
Bush Making Machines	2		
Pin Making Machine	1		
Heat Treatment Plant	4		
Motorcycle Chain Auto Assembly Production Line	1		
Inner & Outer Plate Auto String Machine	1		
On-line Oiling Machine	1		
Total Machinery Cost			91,125,856
Installation Cost (Fabrication cost)	1	2,500,000	2,500,000
Industrial Exhaust Fans	8	45,000	360,000
Generator*	1	3,000,000	3,000,000
Transformers	1	2,500,000	2,500,000
Material Transfer Trolleys etc.	6	18,000	108,000
Stacker	6	78,000	468,000
Product Testing Lab Equipment	1	500,000	500,000
Miscellaneous Equipment			500,000
Total Machinery & Equipment			101,061,856

* 250 KVA used generator.

8.6 Furniture & Fixtures Requirement

Details of the furniture and fixture required for Motorcycle Chain Manufacturing Unit is given below:

Table 8: Furniture & Fixture Requirement

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Table	18	17,200	309,600
Sitting Chairs	27	6,700	180,900
Guest Chairs	2	5,800	11,600
Sofa Set	1	25,000	25,000
Carpeting	50	1,250	62,500
Tube Lights	82	800	65,600
Fans	31	4,500	139,500
Exhaust Fans	9	3,000	27,000
Wires & DB's	1	30,000	30,000
Air conditioners (1 Ton)	4	83,000	332,000
Total Furniture & Fixtures			1,183,700

8.7 Office Equipment Requirement

Following office equipment will be required for the unit.

Table 9: Office Equipment Requirement

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Laptops	4	125,000	500,000
Computers for Staff	6	70,000	420,000
UPS for Computers	1	95,000	95,000
Computer printer (s)	2	60,000	120,000
Telephones	6	4,500	27,000
Fridge	1	130,000	130,000
Fire Extinguishers	5	7,500	37,500
Microwave Oven	1	22,000	22,000
Water Cooler	1	115,000	115,000
LED for Meeting Room	1	75,000	75,000
Total Office Equipment			1,541,500

8.8 Office Vehicle Requirement

A delivery vehicle worth Rs. 3.5 million along with a motorbike worth Rs. 115,000 is required for the unit. Total amount for Vehicles including the registration/transfer cost is estimated at Rs. 3.74 million.

8.9 Human Resource Requirement

To run operations of Motorcycle Chain Manufacturing Unit smoothly, details of human resources required along with number of employees and monthly salary are recommended as under;

Table 11: Human Resource Requirement

Position	No. of Person	Salary Per Month (Rs.)	Annual Salary (Rs.)
CEO	1	200,000	2,400,000
Accounts Manager	1	60,000	720,000
Accounts Officer	1	35,000	420,000
Sales Manager	1	120,000	1,440,000
Sales Officer	2	80,000	1,920,000
Production In-charge	1	150,000	1,800,000
Production Supervisor	1	80,000	960,000
Production Staff	17	35,000	7,140,000
Mechanic	1	35,000	420,000
Electrician	1	35,000	420,000
Quality In-charge	1	50,000	600,000
Procurement Manager	1	70,000	840,000
Admin/IT/HR Officer	1	50,000	600,000
Support Staff / Factory Worker	2	30,000	720,000
Office Boy	2	25,000	600,000
Driver	1	40,000	480,000
Packing Staff	4	30,000	1,440,000
Warehouse In-charge	1	30,000	360,000
Security Guard	2	35,000	840,000
Total	42		24,120,000

8.10 Raw Material Requirement

Mainly the Raw Material is imported from China as it is not available in local market. Also Engineering Development Board (EDB) gives quota for the import of Raw Material in order to get discount on custom duties and other taxes. The quota and import substitution

assigned by EDB is based on the requirement and localization of input parts used in manufacturing/assembling process. Chain Parts (i.e. Roller, Bush, Outer and Inner Plate, etc.) may also be imported and assembled at facility but it may cost high due to normal import duties and taxes. In the proposed unit all the parts will be locally manufactured based on the sheets imported from China under the EDB quota system.

The Raw Material detail is given in the table below.

Table 12: Raw Material Grade

Part Name	Material Grade
Roller	10# Steel
Bush (Seam Type)	20 Mn
Pin	30 GnMn Ti
Outer plate	45 Mn
Inner Plate	45 Mn
Collecting Link (CL)	

8.11 Utilities and Other Costs

The proposed project Electricity Load is calculated of 180 Kilo Watts. An essential cost to be borne by the project is the cost of electricity and fuel for generator. The said expenses are estimated to be around Rs. 0.98 million per month. Furthermore, promotional expenses are essential for marketing of this unit, and are estimated as 2.0% of revenue each year.

8.12 Revenue Generation

Based on the assumed capacity utilization for manufacturing of Chains, sales revenue during the first year of operations is estimated as under:

Table 2: Revenue Generation – Year 1

Description of Chains for	Operational Capacity 60% - in Year 1	Finished Goods Inventory*	Production Sold in Year 1	Sale Price Per Chain Gear Set (Rs.)	Revenue (Rs.)
70 CC Bikes	172,800	14,400	158,400	1,044.80	165,496,320
100 CC Bikes	43,200	3,600	39,600	1,057.60	41,880,960
125 CC Bikes	86,400	7,200	79,200	1,160.00	91,872,000
Rikshaw Chains	129,600	10,800	118,800	1,268.00	150,638,400
Total	432,000	36,000	396,000		449,887,680

* 30 Days Finished Goods Inventory

9 ANNEXURES

9.1 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	449,887,680	581,104,920	688,703,057	812,009,772	953,090,799	1,053,888,884	1,159,277,772	1,275,205,549	1,402,726,104	1,542,998,715
<i>Cost of sales</i>										
Raw Material Cost	322,947,703	398,179,838	450,456,998	506,966,423	568,000,649	599,523,198	629,499,358	660,974,326	694,023,043	728,724,195
Packing Cost	4,752,000	5,859,000	6,628,230	7,459,736	8,357,821	8,821,658	9,262,741	9,725,878	10,212,172	10,722,781
Operation costs 1 (direct labor)	11,715,000	13,967,885	15,371,754	16,915,679	18,613,744	20,582,318	22,640,550	24,904,605	27,395,065	30,134,571
Operating costs 2 (machinery maintenance)	1,980,000	2,441,250	2,761,763	3,108,223	3,482,425	3,675,691	3,859,475	4,052,449	4,255,072	4,467,825
Operating costs 3 (direct electricity)	10,779,336	13,472,770	16,918,903	21,252,296	26,702,196	31,627,385	37,579,020	44,771,871	53,465,728	63,974,856
Operating costs 4 (Carriage & Transportation)	1,584,000	1,953,000	2,209,410	2,486,579	2,785,940	2,940,553	3,087,580	3,241,959	3,404,057	3,574,260
Total cost of sales	353,758,039	435,873,742	494,347,057	558,188,935	627,942,776	667,170,803	705,928,725	747,671,088	792,755,137	841,598,488
Gross Profit	96,129,641	145,231,178	194,356,000	253,820,836	325,148,024	386,718,081	453,349,047	527,534,461	609,970,967	701,400,227
<i>General administration & selling expenses</i>										
Administration expense	11,340,000	12,474,000	13,721,400	15,093,540	16,602,894	18,263,183	20,089,502	22,098,452	24,308,297	26,739,127
Administration benefits expense	1,134,000	1,247,400	1,372,140	1,509,354	1,660,289	1,826,318	2,008,950	2,209,845	2,430,830	2,673,913
Electricity expense	990,696	1,089,766	1,198,742	1,318,616	1,450,478	1,595,526	1,755,078	1,930,586	2,123,645	2,336,009
Water expense	144,000	151,200	158,760	166,698	175,033	183,785	192,974	202,622	212,754	223,391
Gas expense	240,000	252,000	264,600	277,830	291,722	306,308	321,623	337,704	354,589	372,319
Travelling expense	1,360,800	1,496,880	1,646,568	1,811,225	1,992,347	2,191,582	2,410,740	2,651,814	2,916,996	3,208,695
Communications expense (phone, fax, mail, internet, etc.)	567,000	623,700	686,070	754,677	830,145	913,159	1,004,475	1,104,923	1,215,415	1,336,956
Office vehicles running expense	1,683,686	1,852,055	2,037,260	2,240,986	2,465,085	2,711,594	2,982,753	3,281,028	3,609,131	3,970,044
Office expenses (stationary, entertainment, janitorial services, etc)	907,200	997,920	1,097,712	1,207,483	1,328,232	1,461,055	1,607,160	1,767,876	1,944,664	2,139,130
Promotional expense	8,997,754	8,547,866	8,120,473	7,714,449	7,328,727	6,962,290	6,614,176	6,283,467	5,969,294	5,670,829
Professional fees (legal, audit, consultants, etc.)	899,775	1,162,210	1,377,406	1,624,020	1,906,182	2,107,778	2,318,556	2,550,411	2,805,452	3,085,997
Depreciation expense	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700
Amortization of pre-operating costs	310,400	310,400	310,400	310,400	310,400	-	-	-	-	-
Bad debt / Waste production expense	4,498,877	4,273,933	4,060,236	3,857,224	3,664,363	3,481,145	3,307,088	3,141,733	2,984,647	2,835,414
Subtotal	46,921,888	48,327,029	49,899,467	51,734,202	53,853,595	55,851,422	58,460,774	61,408,162	64,723,412	68,439,525
Operating Income	49,207,754	96,904,149	144,456,533	202,086,634	271,294,428	330,866,659	394,888,273	466,126,299	545,247,555	632,960,702
Earnings Before Interest & Taxes	49,207,754	96,904,149	144,456,533	202,086,634	271,294,428	330,866,659	394,888,273	466,126,299	545,247,555	632,960,702
Earnings Before Tax	49,207,754	96,904,149	144,456,533	202,086,634	271,294,428	330,866,659	394,888,273	466,126,299	545,247,555	632,960,702
Tax	16,342,713	33,036,452	49,679,786	69,850,322	94,073,050	114,923,330	137,330,895	162,264,204	189,956,644	220,656,245
NET PROFIT/(LOSS) AFTER TAX	32,865,040	63,867,697	94,776,747	132,236,313	177,221,379	215,943,329	257,557,378	303,862,095	355,290,911	412,304,456

9.2 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	4,451,956	1,170,884	23,810,198	49,361,808	81,663,584	127,572,448	176,826,998	228,263,065	282,409,414	340,163,871	604,719,854
Accounts receivable		18,488,535	21,184,779	26,091,945	30,836,565	36,269,190	41,239,309	45,476,027	50,023,630	55,025,993	60,528,592
Finished goods inventory		32,159,822	36,557,153	41,442,268	46,775,609	52,602,536	55,597,567	58,827,394	62,305,924	66,062,928	70,133,207
Equipment spare part inventory	82,500	106,805	126,868	149,923	176,371	195,467	215,503	237,592	261,945	288,794	-
Raw material inventory	54,616,617	70,706,797	83,989,411	99,252,097	116,761,220	129,403,221	142,667,051	157,290,423	173,412,692	191,187,493	-
Total Current Assets	59,151,073	122,632,842	165,668,409	216,298,041	276,213,350	346,042,862	416,546,427	490,094,501	568,413,604	652,729,080	735,381,653
<i>Fixed assets</i>											
Land	17,000,000	17,000,000	17,000,000	17,000,000	17,000,000	17,000,000	17,000,000	17,000,000	17,000,000	17,000,000	17,000,000
Building/Infrastructure	61,896,830	58,801,988	55,707,147	52,612,305	49,517,464	46,422,622	43,327,781	40,232,939	37,138,098	34,043,256	30,948,415
Machinery & equipment	101,061,856	90,955,670	80,849,485	70,743,299	60,637,114	50,530,928	40,424,742	30,318,557	20,212,371	10,106,186	-
Furniture & fixtures	1,183,700	1,065,330	946,960	828,590	710,220	591,850	473,480	355,110	236,740	118,370	-
Office vehicles	3,741,525	3,367,373	2,993,220	2,619,068	2,244,915	1,870,763	1,496,610	1,122,458	748,305	374,153	-
Office equipment	1,541,500	1,387,350	1,233,200	1,079,050	924,900	770,750	616,600	462,450	308,300	154,150	-
Wapda Security Deposit											
Total Fixed Assets	186,425,411	172,577,711	158,730,011	144,882,312	131,034,612	117,186,913	103,339,213	89,491,514	75,643,814	61,796,114	47,948,415
<i>Intangible assets</i>											
Pre-operation costs	1,552,000	1,241,600	931,200	620,800	310,400	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	1,552,000	1,241,600	931,200	620,800	310,400	-	-	-	-	-	-
TOTAL ASSETS	247,128,484	296,452,153	325,329,621	361,801,153	407,558,362	463,229,775	519,885,640	579,586,015	644,057,418	714,525,194	783,330,068
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		16,458,629	20,161,495	22,982,836	26,074,191	29,155,051	31,023,415	32,882,860	34,866,875	36,984,928	30,571,841
Other liabilities											
Total Current Liabilities	-	16,458,629	20,161,495	22,982,836	26,074,191	29,155,051	31,023,415	32,882,860	34,866,875	36,984,928	30,571,841
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	247,128,484	247,128,484	247,128,484	247,128,484	247,128,484	247,128,484	247,128,484	247,128,484	247,128,484	247,128,484	247,128,484
Retained earnings		32,865,040	58,039,642	91,689,833	134,355,688	186,946,240	241,733,741	299,574,671	362,062,060	430,411,783	505,629,743
Total Equity	247,128,484	279,993,524	305,168,126	338,818,317	381,484,171	434,074,723	488,862,225	546,703,155	609,190,543	677,540,266	752,758,227
TOTAL CAPITAL AND LIABILITIES	247,128,484	296,452,153	325,329,621	361,801,153	407,558,362	463,229,775	519,885,640	579,586,015	644,057,418	714,525,194	783,330,068

9.3 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		32,865,040	63,867,697	94,776,747	132,236,313	177,221,379	215,943,329	257,557,378	303,862,095	355,290,911	412,304,456
Add: depreciation expense		13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700	13,847,700
amortization of pre-operating costs		310,400	310,400	310,400	310,400	310,400	-	-	-	-	-
amortization of training costs		-	-	-	-	-	-	-	-	-	-
Deferred income tax		-	-	-	-	-	-	-	-	-	-
Accounts receivable		(18,488,535)	(2,696,245)	(4,907,165)	(4,744,620)	(5,432,625)	(4,970,119)	(4,236,719)	(4,547,603)	(5,002,363)	(5,502,599)
Finished goods inventory		(32,159,822)	(4,397,331)	(4,885,116)	(5,333,341)	(5,826,927)	(2,995,031)	(3,229,827)	(3,478,530)	(3,757,004)	(4,070,279)
Equipment inventory	(82,500)	(24,305)	(20,064)	(23,055)	(26,448)	(19,096)	(20,035)	(22,089)	(24,353)	(26,849)	288,794
Raw material inventory	(54,616,617)	(16,090,180)	(13,282,614)	(15,262,686)	(17,509,123)	(12,642,000)	(13,263,830)	(14,623,373)	(16,122,268)	(17,774,801)	191,187,493
Accounts payable		16,458,629	3,702,866	2,821,341	3,091,355	3,080,861	1,868,364	1,859,445	1,984,015	2,118,053	(6,413,087)
Cash provided by operations	(54,699,117)	(3,281,072)	61,332,409	86,678,166	121,872,234	170,539,691	210,410,377	251,152,515	295,521,055	344,695,646	601,642,478
<i>Financing activities</i>											
Issuance of shares	247,128,484	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activities	247,128,484	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(187,977,411)	-	-	-	-	-	-	-	-	-	-
Acquisitions											
Cash (used for) / provided by investing activities	(187,977,411)	-	-	-	-	-	-	-	-	-	-
NET CASH	4,451,956	(3,281,072)	61,332,409	86,678,166	121,872,234	170,539,691	210,410,377	251,152,515	295,521,055	344,695,646	601,642,478

10 KEY ASSUMPTIONS

10.1 Operating Cost Assumptions

Description	Details
Administration Benefit Expenses	10% of admin. expense
Traveling Expenses	12% of admin. expense
Communication Expenses	5% of admin. expense
Office expenses (stationary, entertainment, janitorial services, etc.)	8% of admin. expense
Promotional expense	2.0% of revenue
Office Vehicle Running Expenses	45% of the Vehicle Cost
Professional fee (Legal, Audit, etc.)	0.2% of revenue
Operating costs growth rate	5%
Depreciation on Building and Infrastructure	5%
Depreciation on Machinery & Equipment	10%
Depreciation on Furniture and Fixture	10%
Depreciation on Office Equipment	10%
Depreciation on Office Vehicle	10%

10.2 Production Cost Assumptions

Description of Chains for	Chain Material	Sprockets	Total (Rs. / Chain Gear Set)
70 CC	400	350	750
100 CC	405	354	759
125 CC	444	389	833
Rikshaw	485	425	910
Raw Material Cost Growth Rate			5%

10.3 Revenue Assumptions

Description	Details
Growth is Sales Price	10%
Days Operational / Year	330
Hours Operational Per Day	8
Production Capacity in First Year	60%

Percentage Increase in Production Capacity every Year	5%
Maximum Production Capacity	80%
Accounts Receivable	15 Day
Accounts Payable	15 Days