



DIAGNOSTIC STUDY

AUTOPARTS CLUSTER LAHORE – PAKISTAN

Conducted By

Mr. Mohammad Asif – SMEDA Punjab Lahore

Supervised By

Mr. Muhammad Alamgir Chaudhry – Provincial Chief, SMEDA Punjab

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Partner Agency



Focal Point UNIDO:

Mr. Anjum Fayyaz – NPC UNIDO

Mr. Sarwar O. H. Hobohm - Team Leader CDP UNIDO Vienna

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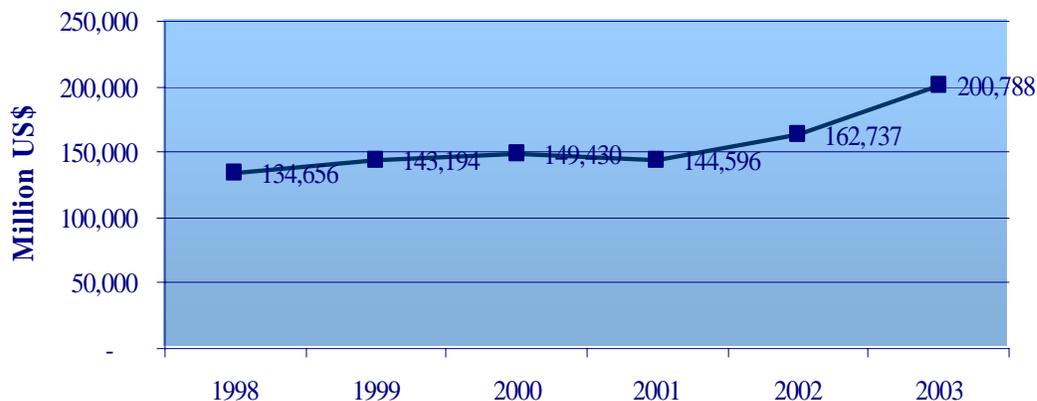
1 Introduction – Automotive Industry

The automotive industry is an important segment of the economy in any country as it links many industries and services. Production of a transport vehicle incorporates all possible industrial activities. This gives a strategic advantage and continuity to the local parts manufacturing industries, which in turn develop their capabilities in their respective fields. The fortune of the Auto Parts or Automotive Components segment are inextricably linked to the performance of its dominant customer i.e. Automotive Sector. Apart from demand, this business critically impacts the industry structure of auto parts.

2 Auto Parts Market – Global Scenario

Auto market was one of the largest segments in world trade. The annual size of automotive export trade in the world had grown to a massive level of over US \$ 600 billion, which account for about 10% of world export. The total world market of auto parts had crossed US \$ 200 billion.

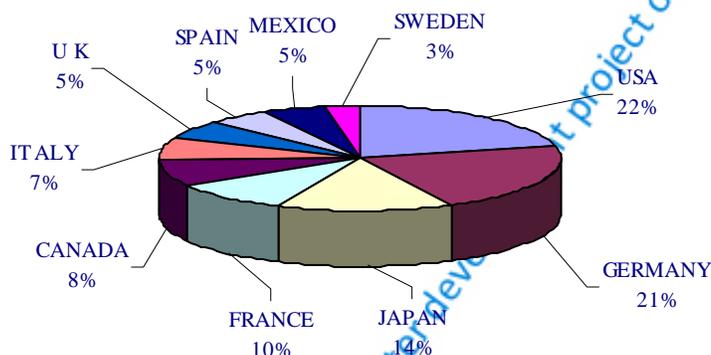
World Market of Auto Parts



USA was the biggest market, which constituted the 26% of total world imports of auto parts. Other major importers were Canada, Germany and United Kingdom.

USA was also the top exporters of auto parts in the world. Its exports were 22% of total world exports, Germany was second largest exporter with 21% share and Japan was the third largest exporter with 14% share of world auto parts exports.

Top 10 Exporting Countries - Auto Parts



3 History of Pakistan Automobile Industry

The automotive assembling in Pakistan started in 1950 when National Motors Limited, a public limited company and the pioneer in the industry, came into existence. Established by General Motors of USA National Motors assembled passenger cars as well as commercial vehicles which carried "General Motors" brands such as Bedford, Vauxhall, Chevrolet and Holden.

A regular car industry started in the country in 1983, when Suzuki commenced production eyeing the small and LCV car segment of 800cc-1000cc range, and introduced Suzuki car which targeted the middle-income group (constituting the larger segment of the market) by providing an affordable car. Then there was a long gap until the early 90's when Indus Motor Company was established to manufacture Toyota vehicles in Pakistan. Soon after Honda Atlas came with the Civic and Gandhara Nissan entered the market with Sunny. Some years later Dewan Motors set up a plant to manufacture Hyundai and Kia vehicles in Pakistan. Since then the market has changed all together.

After struggling through nineties, a decade full of uncertainties and frequent policy the Pakistani Auto Industry had been able to achieve double digit growth consistently since the last 4 years. The industry operated under franchise and technical cooperation agreements with Japanese, European and Korean manufacturers. The contribution to economy by automobile industry in Pakistan is as follows:

Table: Automotive Industry Contribution to Economy

Total Investment	Rs. 98 billion
Foreign Exchange Savings	US \$ 1.2 billion
Revenues	Rs. 51.50 billion (8% of total)
Contribution to GDP	Rs. 153 billion
Employment Generated	500,000 workforce

3.1 Industry Growth

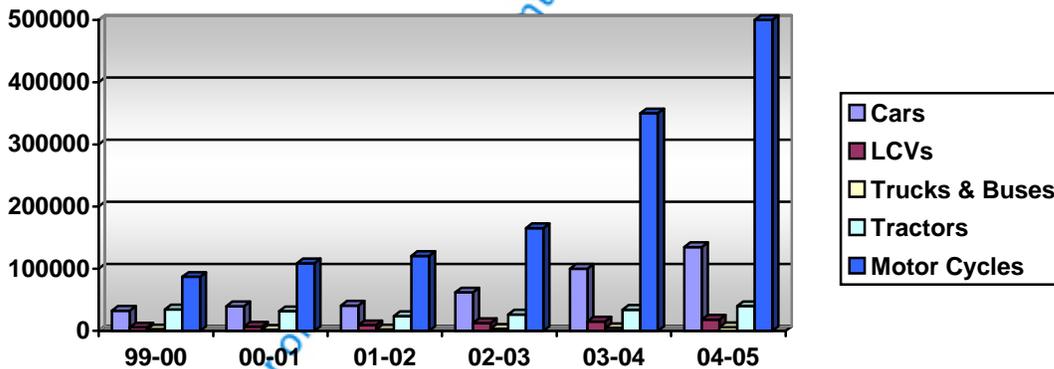
The automotive sector has posted a phenomenal growth during 2003-04 and 2004-05 in the wake of sharp increase in the demand of automobiles. It was noted that OEMs and Vendors have made heavy investment during the last three years, which have helped them enhance their production capacities besides achieving progressively higher indigenization levels.

The car industry had registered 48% growth during this period and the production of cars was likely to increase to 135,000 units by the end of 2004-05, more than double during the last two years. Similarly the production of tractors had also significantly increased by around 24%. The induction of Chinese brand motorcycles had given a much-desired boost to the motorcycle industry, contributing significantly towards development of vendor industry besides creating a congenial competitive environment, benefiting the customers ultimately. The following table highlights the impact of Engineering Vision on the local automotive industry:

Table: Growth of Automotive Sector

	99-00	00-01	01-02	AGR %	02-03	03-04	04-05	AGR %
Cars	32,461	39,573	40,601	12	62,073	100,000	135,000	48
LCVs	5,502	6,924	9,055	28	12,548	15,000	18,000	20
Trucks & Busses	2,373	1,808	2,220	(6)	3,225	4,500	57,00	33
Tractor	34,559	31,635	23,801	(17)	26,240	34,000	40,000	24
Motor cycles	86,959	108,850	120,627	18	165,105	350,000	500,000	77

AGR is Average Growth Rate



4 Auto Parts Industry of Pakistan

Through indigenous technical resources and technical tie-ups with well-known global companies, the auto parts industry has by and large developed into a well-organized sector of the country.

There were 400 organized units in the auto parts industry, most of which were registered vendors to assemblers/OEMs. Many of these were bound to supply only to OEMs as per their agreements, but due to low demand by the assemblers, they were forced to sell their products in the replacement market in one or the other way. These units efficiently manufactured sophisticated parts like piston, engine valves, gaskets, camshafts, shock absorbers, struts, steering mechanism, cylinder head, wheel hubs, brake drums, wheel bumpers, instruments and instrument panel, gear of all types, radiators, cylinder liners, blinkers and light/lamps, door locks and auto air conditioners.

Along with the organized sector, a good number of small and large units (approximately 1200) were operating in un-organized sector. In fact, 90% of automotive parts industry constituted of Small and Medium size Enterprises (SMEs), out of which about 95% were self-financed. These units produced a wide range of parts for the replacement market. The larger operators in this unorganized sector even manufactured crankshafts (aside from wheel Hubs, brake drums, filters etc.) for replacement market, although not even a single assembler had yet deleted crankshaft because of high accuracy required in metallurgy and machining. However, these dozens of crankshaft manufacturers in the unorganized sector were successfully catering to most of the demand of the replacement market.

The major Statistics and Economic Indicators related to automotive parts manufacturing industry are as follows:

Table: Industry Statistics

Number of Units	Approximately 1600 Units (400 in organized sector, 1200 small scale unorganized ones)
Employment Generated	About 500,000 (Organized sector provides employment to 120,000 people whereas Unorganized sector employs almost 380,000)
Revenues to GOP	Rs. 8 billion (BY Organized sector only)
Total Investment	Rs. 72 billion
Contribution to GDP	Rs. 25 billion
Foreign Exchange Savings	Rs. 279 millions
Import Substitutions	Rs. 699 Millions

Pakistan was the only country in world which formulated the industry specific deletion program to specify local content requirements for cars, motorcycles, buses & trucks, tractors etc. The basic purpose of deletion program was to develop and protect the local

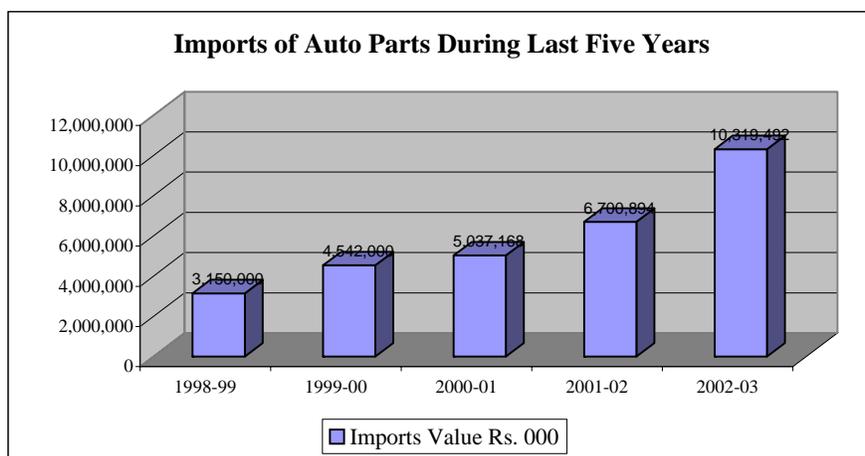
auto parts industry. This local deletion program was formulated up to June 2005 and a new Tariff Based System TRIM's compliant will be introduced soon.

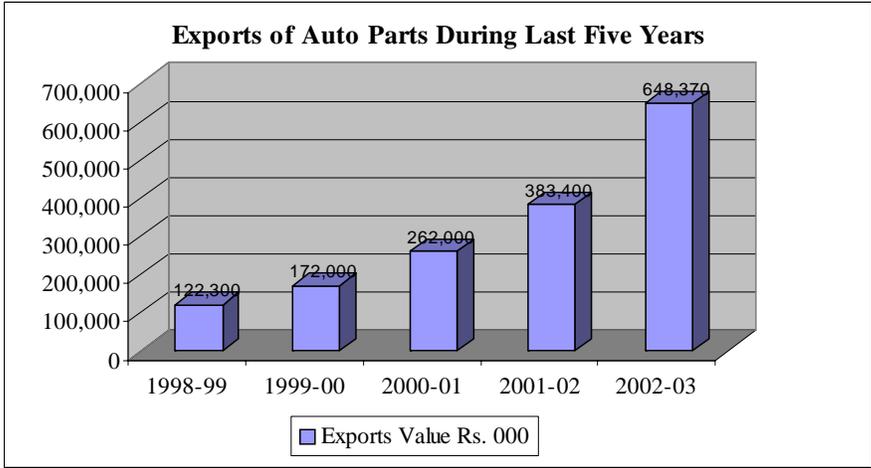
4.1 Pakistan's Exports & Imports of Auto Parts

The imports and exports of Pakistan's auto parts during the last five years are as follows:

Table: Auto Parts Imports & Exports

Auto Parts Imports					
Year	1998-99	1999-00	2000-01	2001-02	2002-03
Imports Value Rs. 000	3,150,000	4,542,000	5,037,168	6,700,894	10,319,492
% Growth	-	44%	11%	33%	54%
Auto Parts Exports					
Exports Value Rs. 000	122,300	172,000	262,000	383,400	648,370
% Growth	-	40%	52%	46%	69%





Pakistan's Major Trading Partners in Auto Parts Market

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5 Lahore Auto Parts Cluster - Introduction

Lahore is the one of most industrialized city of Punjab and is well known for its engineering industry. The automotive assembling in Pakistan started in 1950 when National Motors Limited was established in Karachi. Being simultaneously a sea port and the largest market for vehicles, Karachi became the hub of automobile assembling plants which laid the foundation of Auto Parts Manufacturing Industry in Pakistan. Since its inception the major focus of auto parts industry was in Karachi, but slowly and gradually it also shifted towards Lahore. Currently Lahore auto parts cluster was the second largest hub for auto parts manufacturing after Karachi and catered almost 50% of auto parts demands of assemblers and after markets. The major highlights of Lahore auto parts cluster is as follows:

Table: Lahore Auto Parts Cluster

Number of Units	Approximately 750 units - 100 Large and Medium Organized Sector (Registered vendors to assemblers/OEMs) - 200 Medium and Small Mix of Organized and Unorganized Sector (Producing parts for some new assemblers as well as after sales market) - 450 Small Unorganized Sector (Only focusing on after sales market)
Employment Generated	About 220,000 (Organized sector provides employment to 60,000 people whereas Unorganized sector employs almost 160,000)
Revenues to GOP	Approx. Rs. 4 billion (By organized sector only)
Total Investment	Approx. Rs. 30 billion
Capacity Utilization	80% to 90%

The 100 units in the organized sector were the members of Pakistan Association of Automotive Parts & Accessories Manufacturers. They were the registered vendor of Original Equipment Manufacturers and only work for them. These units were the main Principle Firm in the Lahore auto parts cluster.

5.1 History and Background

The first auto part manufacturing unit was established in Lahore was way back in 1942 for after sales market. The initial focus of auto parts manufacturing units established in 1950s, 1960s and 1970s was limited to tractors, buses & truck parts as well as to cater the need of after sales market of different automobiles. However, the major advancement in the industry took place during the 80's when for the first time Suzuki commenced production in Pakistan. After that other assemblers of cars and motorcycles were also established. The establishment of assembling plants gives the encouragement to local industry to enter in auto parts manufacturing. Overall 80s and 90s are the decade when Lahore auto parts cluster start to develop rapidly. The establishment of units in Lahore per year as follows:

Comparison of Units Established Per Decade

This comparison shows 63% of total auto parts manufacturing units in Lahore was established in 1990-99.

Another interesting point is that 32% of total auto parts manufacturing units were established in just two years i.e. 1995 (20%) and 1994 (12%) as shown below:

Units Established in 1994 and 1995

The Lahore auto parts cluster was highly decentralized and varied in terms of size and location. The small and unorganized units were located in congested areas of Badami Bagh, Meclod Road and Bilal Gang, while large and medium organized units were located in Kot Lkhpat Industrial Estate, Thokar Niaz Baig and Multan Road.

5.2 Key Turning Points

The key turning points for the Lahore auto parts cluster are as follows:

- Entrance of new manufacturing concerns in early nineties.
- Franchise and technical cooperation agreements with Japanese, European and Korean manufacturers.
- Automobile manufacturers (assemblers/OEMs) support in the form of technical assistance agreements, in training manpower, in financial support, in creating an atmosphere where the vendors are treated as an extension of their own facilities.
- Automobile manufacturer's willingness to indigenize components.
- Consistent economic and investment policies of government in late nineties.
- Easy financial assistance by Banks, Financial Institutions and Leasing Companies.
- In motorcycles segment entrance of local manufacturers in assembling and establishing their plants and offering motorcycles at cheaper rates has resulted the tremendous growth.

6 Analysis of Business Operations

6.1 Production Details

The production of auto parts in Lahore can be broadly categorized into following segments:

- Parts for Cars and Light Commercial Vehicles (LCVs)
- Parts for Two Wheelers and Three Wheelers
- Tractor Parts
- Parts for Trucks and Buses
- Parts for After Sales Market

An automobile consists of more than 20,000 components, with each performing a different function. The product ranges of above segments can be broadly classified into following four broad categories.

- Engine Parts
- Body Parts
- Trims
- Suspension Parts
- Electrical Parts

Body parts was the largest sub-segment, around 34% of units were involved in manufacturing of body parts for all segments. After that, suspension parts was the second largest as around 22% of units were involved in manufacturing suspension parts.

The segment wise detail of manufacturing units was not available as many manufacturers were producing parts for multiple segments. The existing installed capacities of assemblers in different segments in Pakistan are as follows:

Table: Existing Installed Capacity

Category	Assembly Plants	Capacity (Units)
Cars	7	150,000
Trucks & Buses	4	10,000
LCVs	4	25,000
Tractors	4	50,000
Motorcycles	13	400,000

Out of these 32 OEMs/Assembling Plant only 9 were located in Lahore i.e. One Car Assembling Plant, 2 Tractor Assembling Plant and 6 Motorcycle Plants. The Lahore auto parts cluster was not only focusing the assembly plants and after markets of Lahore but was capitalizing on the overall market.

6.2 Production Processes

The automotive components industry is more aptly described as an "agglomeration of industries" rather than as a single industry. An automobile consists of more than 20,000 components, with each performing a different function. These parts broadly categories as boy parts, engine/engine assembly parts, electrical parts, power train & chasse parts and interior trim parts. The production processes of different parts are mixed of different processes. The main processes involved in the manufacturing of auto parts are given below. It is not necessary that production of all parts used in an automobile will comprise of all the following processes.

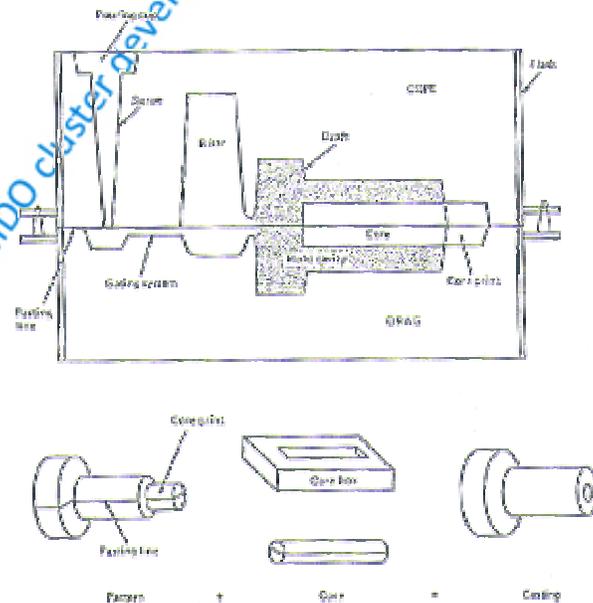
6.2.1 Product Designing

The pattern making and product designing was the first step for the production of all parts. Normally auto parts vendors and manufacturers were not used to make drawings of the parts. The drawings of the particular parts were provided by OEMs. The product designing normally involved to redesign the provided drawing or to convert these drawing to CAD/CAM data for die/molds makings.

6.2.2 Casting Process

Casting was a process by which a fluid melt was introduced into a mold. Allowed to cool in the shape of the form, and ejected to make a fabricated part or casting. main elements required in process of casting were pattern, mold, cores and The pattern, the original template from which the is prepared, used to create a corresponding cavity in the casting material. Cores were to produce tunnels or holes in the finished mold

part is the final output of the process. Foundry products encompass all cast products that were formed by providing molten metal into molds or dies and allowing the metal to solidity. The terms "Castings" and "Foundry Products" were used interchangeably. The main castings products include side covers, engine bracket, gear box, axel casing, fly wheels etc of all type of automobiles. The cast parts were further forwarded for machining.



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6.2.3 Machining Process

Machining was a process designed to change the size, shape, and surface of a material through removal of materials that could be achieved by straining the material to fracture or by thermal evaporation. A machining system consisted of three components: machine tool, cutting tool, and work piece. Machining process offered important benefits such as:

- Excellent dimensional tolerances - Example is forged crankshaft where holes and bearing surfaces require tight tolerances.
- External and internal geometrical features - Sharp corners, grooves, fillets and various geometry etc.
- Surface finish - Example is a copper mirror by diamond turning
- Removal of heat treat distortion - Parts such as crank and camshafts undergo distortion during heat treatment. Machining is a process for "straightening" the parts.

The classification of machining process is as follows:

Process Name/link.	Brief Description
Automation /CNC control	Modern machine tools are generally controlled using CNC /DNC.
Drilling	Drilling is the production of holes.
Turning	The work piece is rotated around its axis and a cutting tool is fed parallel to the axis to create a cylinder or at right angles to the axis to create a face
Milling	Milling involves feeding the work piece past a rotating cutter with cutting edges on its side or end or both
Grinding	Used to produce a good accurate surface finish...
Shaping	Used to produce flat surfaces by reciprocating tool motion...
Planing	Used to produce flat surfaces by reciprocating Work piece motion...
Saws	Saws are used to cut short lengths of long sections.

6.2.4 Forging Process

Forging was a process of making parts by shaping metal under pressure to produce a finished shape. Each piece was heated, and then shaped until the final product reached the customer's exacting specifications. The finished product was much more reliable for strength and quality than a similar product produced by casting, stamping, or machining.

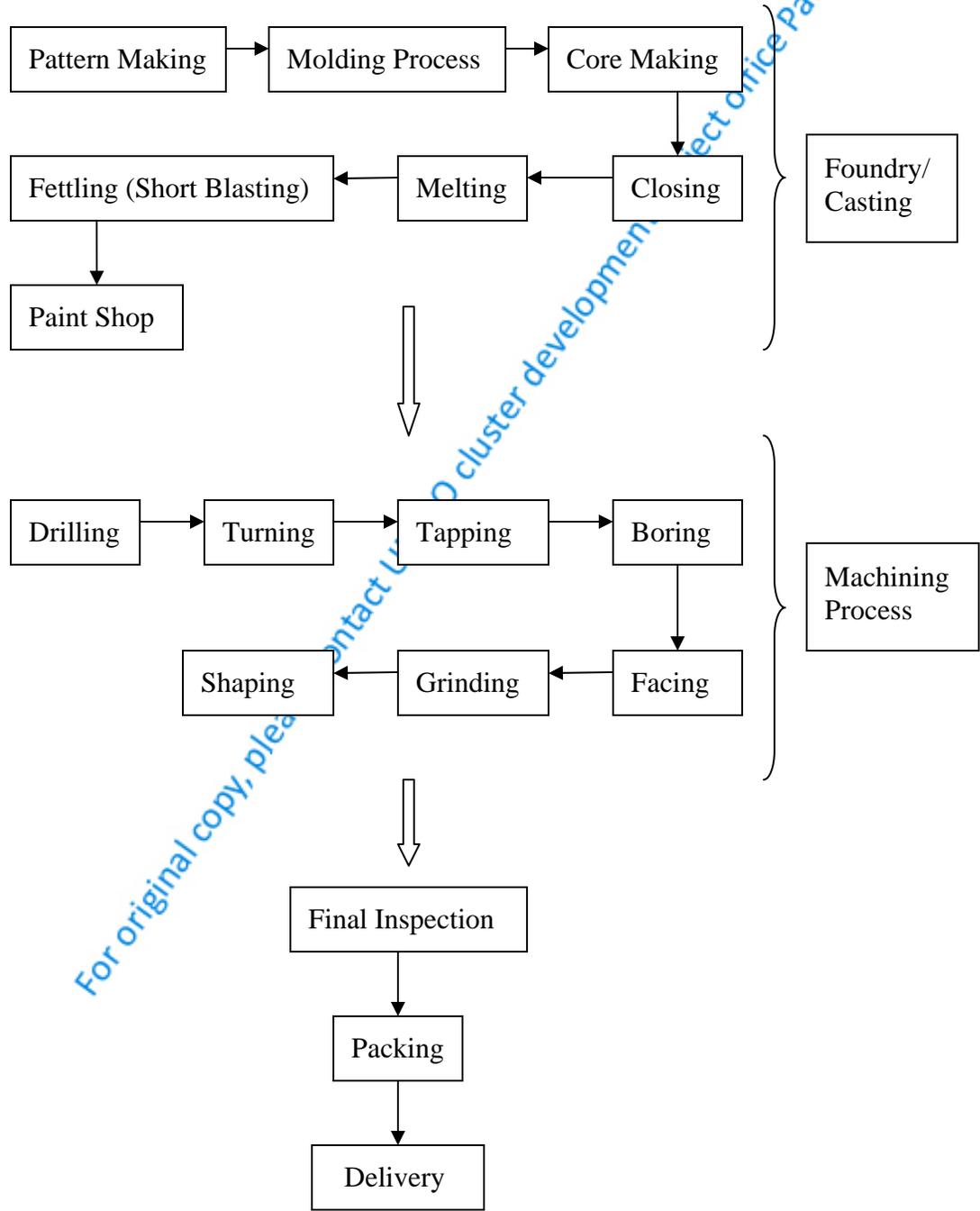
At its most basic level, forging was the process of forming and shaping metals through the use of hammering, pressing or rolling. The process began with starting stock, usually a cast ingot (or a "cogged" billet which has already been forged from a cast ingot), which was heated to its plastic deformation temperature, then upset or "kneaded" between dies to the desired shape and size.

During this hot forging process, the cast, coarse grain structure was broken up and replaced by finer grains. Low-density areas, micro shrinkage and gas porosity inherent in the cast metal were consolidated through the reduction of the ingot, achieving sound centers and structural integrity. Mechanical properties were therefore improved through the elimination of the cast structure, enhanced density, and improved homogeneity. Forging also provide means for aligning the grain flow to best obtain desired directional strengths. Secondary processing, such as heat treating, could also be used to further refine the part. No other metalworking process can equal forging in its ability to develop the optimum combination of properties.

How the open die forging process affects the crystal structure.

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Figure: Production Process/Work Flow Diagram for Excel Cover, Gear Box, Fly Wheels, Side Covers, Axle Casing, Engine Bracket etc.



6.3 Raw Material

The automotive components industry is more aptly described as an "agglomeration of industries" rather than as a single industry. The main raw materials and inputs used for the manufacturing of auto parts were steel, aluminum, copper and their special alloys and many others. The bakelite powder and plastics were main raw material for plastic parts of auto mobiles.

The main raw material which is steel was normally purchased from Pakistan Steel Mills and People Steel Mills. Both these raw material suppliers were located in Karachi. Large and medium firms used to buy directly from these manufacturers, where as small and cottage firms used to buy from local dealers and stockiest. The aluminum, copper and their special alloys and other materials were purchased from Lahore as well as from Karachi. Except steel other raw materials were easily available in local market of Lahore.

The industry was facing a serious problem for the availability of steel which is the main raw material. Pakistan Steel Mills was not able to fulfill their demands. Some manufacturers also used to import the raw materials to fulfill their demands.

6.4 Quality Control Mechanism

6.4.1 Organized Sector

The organized sector units were quite quality conscious. Most of these units were vendors to the local assemblers, so they had to maintain the quality level of their parts. As a result, these units had well defined quality systems. They had applied updated production and quality control theories like Quality Circles, 5-S theory, QCD Theory etc. A considerable number of these units were ISO 9002 certified. As they were required to follow the design and specifications provided by the assemblers, so very few of them were having in-house design centers. Hence ISO 9001 certification was rare in this sector.

The drawing and technical specification of the parts were provided by the assembler. The vendor had to adhere to these specifications and dimensions. Similarly, the relative material standards were provided on the drawing or technical specification sheets. Mostly, these units followed the standards provided by their parent companies.

The approval of regular deliveries of auto parts was subject to thorough inspection at the assembler's premises. Every consignment was bound to be accompanied by a complete quality assurance report made by the Quality Assurance Department/Lab of the vendor. The newly developed parts were sent to the parent company in Japan or to the country of origin for approval. Sometimes the pilot lots were also directed there if the part was vital and complicated.

The assemblers had to allocate a reasonable budget for vendor development activities. These activities included the development of new parts and the establishment of quality systems at vendor's premises.

6.4.2 Unorganized Sector

In the unorganized sector, no specific quality standards were followed. The main concentration was to reduce cost in order to cater to the price-conscious replacement market. Physical appearance and good fit were the criteria of quality inspection in the market. Such parts were manufactured under outdated production processes in small industrial units. In fact parts imported from China, Taiwan etc. were preferred to those locally produced by these units, on the basis of both price competitiveness and better quality. For this reason, the imported parts had a good penetration in Pakistan's auto parts markets.

6.5 Market Analysis

Keeping in view sales patterns and industry dynamics, the market for Lahore auto parts cluster could be categorized in two following segment segments:

6.5.1 Assembling Plants/OEMs Market

Automobile sales in any country indicate the economic prosperity. Similarly the ratio of vehicle per person reflects the health of the automobile industry and per capita income of the population of that country. The composition of auto's demand in Pakistan was dominated by motorcycles 68%, with cars at 21%.

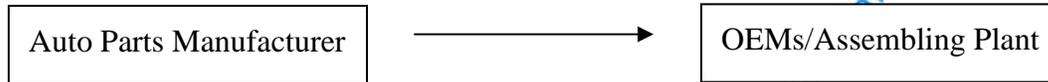
Automobiles	Units Sold
Cars	87,187
Trucks	1,663
Buses	1,195
LCV	12,975
Tractors	31,940
Motorcycle	272,873

Keeping in view the above sales trends and existing installed capacities, it is estimated that Motorcycle and Car Parts were the major dominant segment of market for auto parts manufacturers. This market segment was dominated by Organized Sector which constituted 100

Large and Medium auto parts manufacturing units which were the registered suppliers of top ranked OEMs. There were another 200 Medium and Small units which were also trying to enter in this segment of market. There focus was on new entrants in motorcycles and car segment as well as the specialized after sales market for branded parts.

Distribution Channel

The channel of distribution in market segment was very simple. The auto parts manufacturers directly used to get the others from their registered OEMs and than they directly dispatch the good to OEMs.

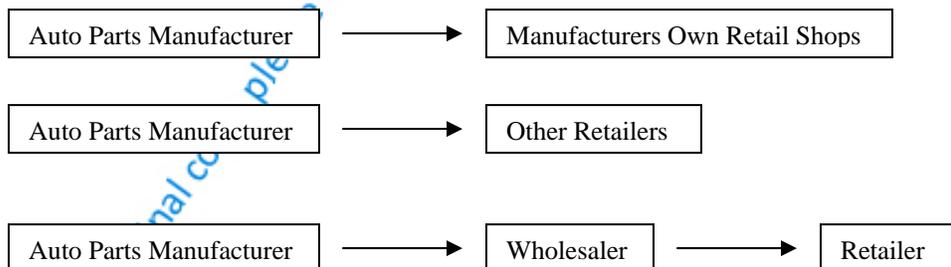


6.5.2 Auto Parts After Sales Market

The after market of auto parts in Pakistan was estimated at US \$ 750 million (imports and local production together. As around 50% market was catered by Lahore auto parts manufacturers, so it is assumed that market potential for Lahore cluster was approximately US \$ 300 million. This market segment was dominated by Unorganized Sector of around 650 units (200 Units small & medium a mix of organized and unorganized sector other 450 units were small and was unorganized sector).

Distribution Channel

As this market segment was mix of Organized and Unorganized sector and was involved in production of a very high diversified range of products, so the channel of distribution in this segment varies according to the dynamics of manufacturing units. The following types of three different distribution channels were prevailing in the market.



6.5.3 Market Competition

Competition in Export Market

As the Pakistani auto parts exporters were up against exporters from developed countries, which had far more advanced technological resources and established market network, they were only able to compete in basic and low-end parts. The local vendors desperately needed technological know-how to improve upon their quality and hence penetrate into higher-end markets. Only 10-15 units in organized sector of cluster were engaged in export. The export of auto parts was a new initiative and the export volume was increasing with a tremendous rate. The exports of auto parts reflect the conformation of locally manufactured auto parts with international standards. Therefore, strong potential exists for export of auto parts.

Competition in Domestic Market

As the auto parts sector was not well organized, the technological know-how and expertise was only available to few large vendors. This sector offered huge potential for new entrants with technological know-how and modern production facilities.

Basis of Competition (Strengths and Weakness of Competition)

Quality and delivery formed the basis of competition among OEM suppliers. The assemblers generally registered the vendors on the basis of their capability to produce parts of required quality and to deliver on time the supply of required quantity of parts. The assemblers on a regular basis evaluated the vendors' performance. In case a vendor is not performing satisfactorily, new source of supply was developed.

Pakistan's replacement market for automotive parts was highly price conscious. The suppliers with right quality and low prices penetrate very fast. A very small quality conscious segment also existed that mainly constitutes of new owners of cars and motorcycles. Owners of buses, trucks, LCVs and tractors usually preferred auto parts of low price.

Some of the local manufacturers and suppliers used media for the advertisement of their products to get maximum share of the market. The manufacturers of filters, tyres, radiators and brake linings etc. were also active in this context. The auto parts of China and Taiwan, although of mediocre quality, had good penetration in the local replacement market due to their very low price.

6.5.4 General Evaluation of Market Prospects

- Currently, the auto parts manufacturing industry was not able to cater the increasing demand of automobiles in the country.
- Looking into the projection of high growth rate in the automotive industry, it was reasonable to expect that the auto parts industry would grow in tandem. This might not only lead to greater utilization of existent capacity in the auto parts industry, but possibly also to an expansion in the capacity.
- For the 10% of the companies in the auto parts industry (organized sector only) who were currently engaged in exports because their products comply with international standards, it was possible to see potential for a further increase in their exports.
- The import of auto parts (which could not be produced locally or the local production of those did not meet the expected standards) was projected to increase dramatically after full implementation of WTO.
- Direct imports of auto parts from India would replace the current practice of Indian imports through a third source.

- It was important to highlight that the atmosphere of political uncertainty domestically and internationally, had introduced the element of uncertainty in the projections too.

6.6 Technology

Technology is rapidly changing in all spheres of life these days and also in auto parts sector. Old conventional systems were changing with computer aided systems. Majority of auto parts industry in Lahore had adopted the conventional systems and had trained their manpower according to these systems. Now the market size had increased tremendously and we need to increase our volume of production. In old times big giants used to produce each and every part by themselves. But now the time has changed and it was rather impossible to achieve the desired results by using these conventional ways. The constraints of conventional systems had not able the industry to meet the targets.

The lack of modern technology and modern system was the biggest hurdle in the growth of Lahore auto parts cluster. Now the industry was moving in the right direction of technology up-gradation. Currently in the organized sector the technology level was high approximately 40% units had latest modern technology. In the unorganized sector the technology level was very low and they were still relying on conventional manufacturing.

In past other countries also had faced these problems. They found a way to cope with this situation by shifting stiffness of manpower into machines. In this way they had not only overcome the problems of labor scarcity, but also increased the volume of production as well.

6.7 Management of Firms

Most of the auto parts units in Lahore were family owned businesses and run by owners themselves and only a few were being professionally managed. The owners of the firm in Organized Sector were mostly qualified and possessed a formal technical education. On the other hand owners of firms in unorganized sector were less qualified and did not possess a formal technical education yet their knowledge about materials, machinery and products was noticeable. The manufacturers who were working with OEMs and also involved in exports were very upward mobile. They kept on improving their professional system and had a keen look to achieve international systems. They also kept on attending international trade fairs and exhibitions on regular basis.

7 Institutional Setup

7.1 *Entrepreneurs Associations*

- ***Pakistan Association of Automotive Parts & Accessories Manufacturers (PAAPAM)***

There was only one industry association in the cluster i.e. **Pakistan Association of Automotive Parts & Accessories Manufacturers (PAAPAM)** which was formed in 1988 to represent and to provide technical and management cooperation to its members. PAAPAM, with its almost a decade old history, had attained a level of an indispensable and extremely effective link between the policy-making echelons at Government and the whole entity of its member firms. It used to take up the problems of the auto parts industry related to policy, fiscal, technical or commercial aspects on appropriate platforms and also pursue them with the respective Government departments. The association also used to organize various seminars and exhibitions.

PAAPAM was a professionally managed association at national level and had members all-over the country. The Association used to operate on completely democratic lines with election of the Chairman, Vice Chairman and Managing Committee (10 members) for a full term of two years. PAAPAM had two office one in Karachi and other in Lahore. The Association had 210 members and this number was constantly increasing.

In Lahore auto parts cluster the only 100 units in organized sector (i.e. principle firms) were the members of the PAAPAM. These units were well organized and registered vendors of top rank assemblers/OEMs.

There was a restriction that only registered vendors with top ranking OEMs could become the member of PAAPAM, so the representation of cluster in the association is very low. The large number of units in the cluster neither had any representation in any trade association nor had their own association at cluster level.

There was also another association called Pakistan Automotive Manufacturers Association (PAMA) for OEMs/assembling plant. PAMA had closed relations with the PAAPAM and had done a lot in developing the registered.

- ***Lahore Chamber of Commerce and Industry (LCCI)***

Lahore Chamber of Commerce and Industry (LCCI) was the largest association of entrepreneurs of all sectors in the city. LCCI had a very good reputation of carrying out several development projects for the industrial sector. The major initiatives and services offered by LCCI include:

- Research Reports and Budget Proposals
- Advisory Services to Members
- Speech writing and Concept Papers
- Seminars and Workshops
- Organizing Trade Delegations

- Trade Fairs and Exhibitions
- Trade Disputes
- Consultancy on Accreditation and Certifications

7.2 Government/Semi Government Support Institutions

▪ **Pakistan Industrial Technical Assistance Centre (PITAC)**

This centre was established in 1962 with the objectives to provide in-plant advisory and consultancy services, technical training, designing and manufacturing of dies and tools, prototype product development disseminate modern technical know-how and keep liaison with the industries. This center had done a lot for the development of engineering industry but its role had diminished for the past 10-15 years due to technical obsolescence of its machinery and equipment.

▪ **Pakistan Council for Scientific and Industrial Research (PCSIR)**

PCSIR is the largest research organization in Pakistan, which was established in 1953. Its main objectives include systematic evaluation, development, value addition, and utilization of the indigenous raw materials; conduct research and development work on problems that are being faced by the industrial sector in order to adopt measures for the application and utilization of research results and indigenization of technical development through adaptation, modification, and improvement of existing technologies appropriate to the local conditions. But unfortunately this center was also not fulfilling industry requirements due to lack of professionalism and linkages with industry.

▪ **Technical Services Centre (TSC)**

Established at Lahore in 1975 to assist the metal and metallurgical industries of Pakistan by solving their technical problems, increasing and improving productivity through transfer of technology, reducing wastes and to save foreign exchange through indigenous development of various components and alloys. The services of this centre were widely utilized by automotive, agricultural, iron and steel foundries, rolling mills and forging units, textile, defense, power plants, gas pipe lines, chemical, cement and fertilizer industries. This center also had the problems of technological obsolescence, lack of professionalism and coordination with the industry stakeholders.

▪ **Export Promotion Bureau (EPB)**

Is the primary agency of the Government of Pakistan engaged in promotion and boosting of country's exports. Since its inception in 1963, it continues to facilitate the exporters in overcoming difficulties faced by them, EPB helps exporters to participate in exhibitions abroad and sends delegations to export markets with a view to explore new markets and develop the traditional markets. EPB had also initiated projects in various export sectors to train necessary manpower that could manage the export trade and industry. Export promotional activities were carried out in co-ordination with trade bodies at home and Pakistan's trade missions abroad.

PAPPAM members had close interaction with EPB and had participated in international exhibitions in Frankfurt, Düsseldorf, Taiwan, Jakarta, Poland, Los

Angeles and Tehran with their support. PAAPAM had also organized two exhibitions PAPS '95 and PAPS '2000 with the collaboration of EPB.

▪ ***Small and Medium Enterprise Development Authority (SMEDA)***

The Small and Medium Enterprises Development Authority (SMEDA) was established in 1998 under the Ministry of Industries and Production in order to foster the development of SME in the economy and was expected to take a key role in this process. Its functions include, inter alia, the facilitation on policy making and the provision of overall planning, programming, research and evaluation of matters related to SME in Pakistan; monitoring and evaluation; encouraging and facilitating development of SME and to protect their interests.

SMEDA had close collaboration with PAAPAM members and with their collaboration had submitted proposals to Government for Technical Up-gradation and Establishment of Technical Centers. There is a need to further extend the services for the auto parts cluster.

▪ ***Engineering Development Board***

Is a Government Organization for promotion of Engineering Industry in Pakistan with following Terms of Reference?

- Develop a long term vision for the development of the Engineering sector.
- Formulate and co ordinate Government policies relating to the Engineering sector Promotion of export.
- Enhancement of technical training
- Formulate policies and guidelines for utilization of technical development and engineering funds.
- Appeal for grievances.
- Management of deletion policy

▪ ***Punjab Small Industries Cooperation (PSIC)***

PSIC is also working for the facilitation of small industries in Punjab. They offered soft loans to small entrepreneurs at subsidized rates. Their main focus was on small units. They were also involved in establishment of Common Facility Centers.

7.3 Technical Training & Educational Institutions

7.3.1 Engineering Colleges and Universities

Public Sector Institute

The following colleges and universities were offering engineering education in the Lahore cluster:

▪ ***University of Engineering & Technology (UET), Lahore***

One of the leading Engineering University of the country offers B.Sc Engineering as well as M.Sc Engineering in almost 15 different technologies.

▪ ***University College of Engineering & Emerging Technologies (UCE&ET) - Punjab University (PU)***

This is also a Public Sector University offers B.Sc Engineering as well as M.Sc Engineering in 4 different technologies.

- **Institute of Quality & Technology Management (IQTM) - PU**

Offers a B.Sc, M.Sc and Phd courses in Total Quality, and Total Quality Management. The institute also offers a wide range of Post Graduate diplomas and Short Courses in TQM.

Private Institutes

There were also some private institutes which were offering Engineering Degrees, but unfortunately the private sector was not much developed in technical education.

- **Usman Institute of Engineering and Technology (UIET)**
- **University of Management Technology (UMT)**

Unfortunately there was no collaboration among the engineering institutes and industry stakeholders. The universities did not consult with industry in curriculum development or offering industry specific courses. The students focus was more on theoretical knowledge instead of practical or technical. There were no linkages among the association and universities for practical exposures. The labs of institutes were not fully utilized and they did not offer any sort of technical services to the industry.

7.3.2 Technical and Vocational Training Institutes

There were two streams of these institutes: one the Technical Institutes which used to offer Diploma in Associate Engineering (3 years) which lead to B.Sc Honors Degree and other the Vocational Institutes which used to offer 2 year diploma, 1 year diploma and short courses of 3 to 9 months in different disciplines. There were two bodies which were managing these technical and vocational training institutes in Punjab with their head offices in Lahore.

- **Technical Education and Vocational Training Authority (TEVTA)**

TEVTA consists of both Technical and Vocational Institutes. In Lahore there were 6 Technical Institutes (of which 3 institutes offer courses related to auto parts cluster) and 19 Vocational Institutes (of 9 institutes offer courses related to auto parts cluster) which were managed and operated by TEVTA.

- **Punjab Vocational Training Council (PVTC)**

PVTC consists of Vocational Institutes. These institutes used to offer free education to needy students through Zakawt Fund and also used to give stipends after successful completion of courses. The institutes of PVTC had close collaboration with Trade Associations. In Lahore there were 3 vocational institutes which offer courses related to auto parts cluster. One of the PVTC Institute i.e. Vocational Training Institute Green Town was managed by PAAPAM Members. In this institute Yamaha, Suzuki and Indus Motor Company had provided their original parts for technical training. The students of this institute were directly inducted by auto parts manufacturers.

The major problem with these technical and vocational institutes was the lack of exposure to modern technologies and better infrastructure facilities. The technologies offered in these institutes were obsolete and make them able to become helpers instead of technical experts. They did not have capabilities to revise their curriculum according to the needs of industry. They did not have well equipped lab or testing facilities. These constraints were the main reasons that they were not able to produce quality graduates.

7.4 Private Business Development Service (BDS) Providers

There was very poor significance of Private BDS providers in the cluster. Very few consultancy firms were working in the cluster. They provided services with respect to ISO 9000: 2004 and other certifications. The BDS providers in the areas of technology, material mixing, product standardization and latest production techniques were the main requirement of the cluster.

7.5 Banks and Financial Institutions

Lahore is adequately covered by nationalized and private sector banks and financial institutions. The credit needs of the auto parts industry were sufficiently met by these institutions. The banks and financial institutions were willing to finance the auto parts vendor as this sector had posted a phenomenal growth during last 3-4 years. Only issue was that the financing rate in Pakistan is very high, due to this reason manufacturers avoid to take financing. So there were no issues with respect to financing in auto parts cluster of Lahore. The main banks and financial institutions involved in financing are as follows.

- Union Bank Ltd.
- Muslim Commercial Bank Ltd (MCB)
- Bank Alfalah
- Askari Bank Ltd
- Habib Bank Ltd
- Crescent Bank and Crescent Leasing
- SME Bank etc.

8. SWOT Analysis

<p><u>Strengths</u></p> <ul style="list-style-type: none"> • Capability to produce low volumes competitively and capture niche markets • Presence of world class automotive manufacturers in each segment • Availability of low cost human resource • OEMs quality standards are largely achievable • High growth and demand in the market • Good entrepreneurial skills • Good mechanical skills 	<p><u>Weaknesses</u></p> <ul style="list-style-type: none"> • No long term vision or policy • Lack of Information Dissemination (Technical know how, Information on standards, Processing techniques, Design criteria's) • Product design & engineering capabilities constrained due to absence of economies of scale • Lack of Tooling and die manufacturing facilities • Lack of skilled manpower for modern machinery • Lack of well equipped facilities for product testing and research & development • High cost of utilities • High cost of financing and leasing • Availability of raw material especially steel • Absence of membership in any Trade Bloc • Too many regulatory & taxation agencies
<p><u>Opportunities</u></p> <ul style="list-style-type: none"> • Potential for high market growth due to wide gap in population to vehicle ratio • Export potential in niche markets • Domestic replacement parts market (if smuggling curtailed) • Global spare parts market of discontinued vehicles • Emerging Afghanistan, Nepal, Bangladesh, Iraq, Sri Lanka markets • Great potential all over the world for tractors and trailer parts market 	<p><u>Threats</u></p> <ul style="list-style-type: none"> • Poor image of the country • Regional conflicts • Smuggling, under-invoicing and dumping of auto parts • Phasing out of administrative control under WTO regime • Continuous depreciation of rupee against top world currencies

9. Issues and Problems of Cluster

Lahore auto parts cluster had its own peculiar problems. Technical know-how was the major field where it needs guidance and assistance for achieving required growth rate and progress. Advancement in technology had necessitated auto parts industry to go for a proper development of human and technological resources. In this changing scenario following problems and the issues had been identified in the industry:

- Information Dissemination (Technical know how, Information on standards, Processing techniques, Design criteria's)
- Product design & engineering capabilities constrained due to absence of economies of scale
- No long term vision or policy
- Lack of Tooling and die manufacturing facilities
- Low volume of production
- Systems were labor intensive
- Competent/skilled labor was very scarce.
- Conventional machines were not able to meet the precision manufacturing.
- Available labor was not familiar with modern technology
- Scarcity of raw material especially steel
- High cost of utilities
- Poor quality of electric power in spite of high tariff rates
- Very high Sales Tax rate
- No facilities for research and development
- High cost of financing and lease purchase
- Absence of membership in any Trade Bloc
- Smuggling, under-invoicing and dumping of auto parts
- Inconsistent policies and regularity procedures by Government
- Lack of coordination and linkages with Government/Semi Government Supporting Bodies and Technical Training Institutes

10. Cluster Vision, Targets and Strategy

10.1 Cluster Vision

To enhance the production capabilities of vendors to achieve the 100% localization of parts in all automotive segments and to make Pakistani vendors member of global supply chain by the year 2010 by improving product quality standards, technology up-gradation, skill development, creating networks and linkages with international Business Support Organizations and support institutions.

10.2 Targets

The main targets of Auto Parts Cluster Development activities for three to four years down the road are as follows:

- Development of long term vision, mission, regulatory policy and set clear direction for development of auto parts industry in the next 5 years
- Information dissemination in the cluster
- Creating awareness regarding importance of forming networks/consortiums
- Formation of networks (2 networks in year 1)
- Capacity building of entrepreneurs and trade associations
- Skilled labor development
- Regional and global market expansion
- Product standardization and quality improvement
- Technology up-gradation in the cluster

10.3 Strategy

A combination of short term activities and long term activities has been adopted to achieve the above targets for development of Lahore Auto Parts Cluster.

10.3.1 Short Term Activities

Short term activities would focus on soft interventions in the cluster. The main focus would be on creating awareness and setting line of action and long term activities for development of cluster. The initial focus would be to encourage entrepreneurs for formation of networks. The trust building exercises and awareness workshops/seminars regarding the importance of networks/consortiums would be organized. During the first year two networks would be formed.

The plan for capacity building of trade association (PAAPAM) and entrepreneurs would be made. A comprehensive training need assessment survey of the cluster would be carried out to start a series of training programs for skilled labor development. A master plan to set clear vision, mission, regulatory policy and line of direction for development of auto parts industry in next five years would be prepared. On the basis of master plan long term activities would be highlighted.

Linkages with international Business Support Organization would be created for regional and global market expansion. The linkages with local support institutions would also be created for soft interventions and establishing conducive business environment for entrepreneurs.

10.3.2 Long Term Activities

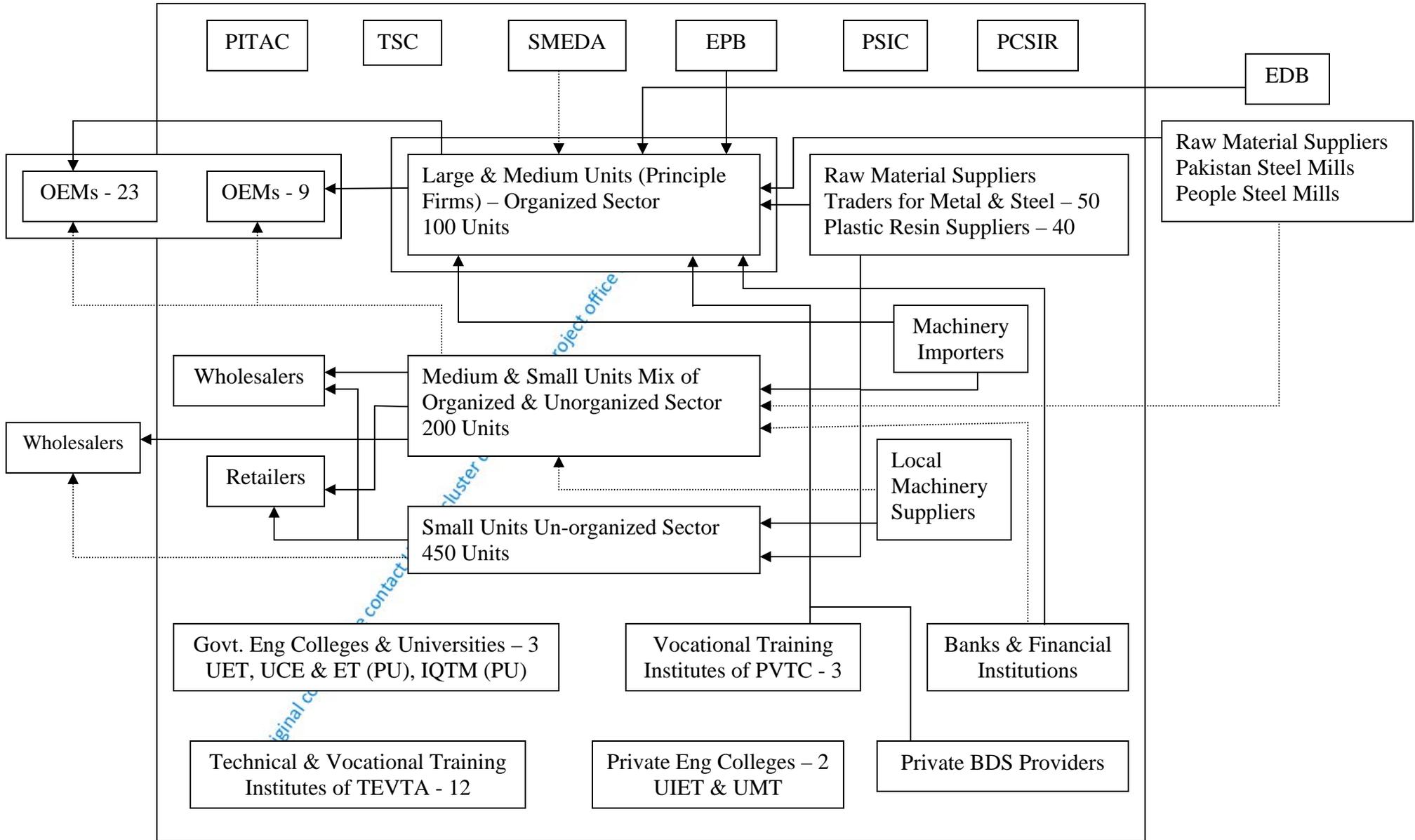
The focus of long term activities would be on hard interventions in the cluster. The objective of these activities would be to develop the cluster as a whole. The main focus would be quality improvements, technology up-gradation, skilled labor development and encouraging the entrepreneurs to be a member of global supply chain.

In this regard exposure visit to Japanese, Thailand etc auto industries would be arranged and vendors would be encouraged to go for international accreditation and certifications. The testing labs and research and development facilities would be upgraded. In collaboration with technical institutions vendor development and training cell would be established for skilled labor. Training programs/workshops for operators/workers on use of modern technology would be arranged on regular basis.

Technology transfer, replication of modern machinery and corporate assistance would be taken through liaison with JETRO, JICA and KOICA. Linkages with international machinery suppliers would be created and networks would be encouraged to go for joint purchases.

For original copy, please contact MIDO Cluster Development Project Office Pakistan

Diag 11. Cluster Map – Auto Parts Cluster Lahore



12. Cooperation Matrix

12.1 Present

	PAAPAM	LCCI	PITAC	PCSIR	TSC	EPB	SMEDA	EDB	PSIC	Govt Uni	Pvt Uni	TEVTA	PVTC	Private BDS	Banks & Fis	Raw Mat Sup
PAAPAM	x	3	1	1	1	3	3	5	1	0	0	1	3	2	4	1
LCCI	3	X	0	0	0	4	4	0	2	1	1	0	0	2	0	0
PITAC	1	0	x	0	2	0	3	4	0	0	0	0	0	0	0	0
PCSIR	1	0	0	x	2	0	3	3	1	2	0	0	0	0	0	0
TSC	1	0	0	0	x	0	3	3	1	0	0	0	0	0	0	0
EPB	3	4	0	0	0	x	2	3	2	0	0	2	2	2	0	0
SMEDA	3	4	3	3	3	2	x	2	3	0	0	3	4	2	3	2
EDB	4	0	4	3	3	2	3	x	0	0	0	2	1	0	0	0
PSIC	0	2	0	0	0	2	3	0	x	0	0	0	0	0	0	0
Govt Uni	0	1	0	2	0	0	0	2	0	x	0	0	0	0	0	0
Pvt Uni	0	1	0	0	0	0	0	0	0	0	x	0	0	0	0	0
TEVTA	1	0	0	0	0	0	3	0	1	0	0	x	0	0	0	0
PVTC	3	0	0	0	0	0	4	0	1	0	0	0	x	0	0	0
Private BDS	2	2	0	0	0	2	2	0	0	0	0	0	0	x	0	0
Banks & Fis	4	0	0	0	0	0	3	0	0	0	0	0	0	0	x	1
Raw Mat Sup	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	x
	28	14	7	8	10	12	35	17	11	3	1	7	7	6	3	3

Scale

0	1	2	3	4	5
NIL	Bad	Fair	Good	V. Good	Excellent

12.2 Future

	PAAPAM	LCCI	PITAC	PCSIR	TSC	EPB	SMEDA	EDB	PSIC	Govt Uni	Pvt Uni	TEVTA	PVTC	Private BDS	Banks & Fis	Raw Mat Sup
PAAPAM	x	3	4	4	4	4	5	5	3	4	4	4	4	3	4	4
LCCI	3	X	0	0	0	5	5	0	3	3	3	3	3	4	4	3
PITAC	5	0	x	3	3	3	4	4	0	4	4	4	4	4	0	0
PCSIR	5	0	3	x	3	3	4	4	3	4	4	4	4	4	0	0
TSC	5	0	3	3	x	3	4	4	2	4	4	4	4	4	0	0
EPB	4	4	2	2	2	x	4	4	2	3	3	3	3	3	0	0
SMEDA	5	4	4	4	4	4	x	4	3	4	4	4	4	5	5	4
EDB	5	3	5	5	5	2	4	x	0	4	4	4	4	4	0	3
PSIC	2	3	2	2	2	2	3	0	x	0	0	2	2	0	0	0
Govt Uni	4	3	4	4	4	3	4	4	0	x	4	3	3	4	4	0
Pvt Uni	4	3	4	4	4	3	4	4	0	4	x	3	3	4	4	0
TEVTA	5	3	4	4	4	3	4	4	2	4	4	x	4	4	0	0
PVTC	4	3	4	4	4	2	4	4	2	4	4	4	x	4	0	0
Private BDS	4	2	4	4	4	2	4	4	1	4	4	4	4	x	0	0
Banks & Fis	5	2	0	0	0	2	5	0	0	4	4	0	0	0	x	1
Raw Mat Sup	4	2	0	0	0	0	3	0	0	0	0	0	0	0	0	x
	64	32	39	39	39	37	56	40	18	46	46	42	42	44	17	11

Improvement

	36	18	32	31	29	25	21	23	7	43	45	35	35	38	14	8
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Scale

0	1	2	3	4	5
NIL	Bad	Fair	Good	V. Good	Excellent

13. Tentative Action Plan

The proposed tentative one year action plan for the development of auto parts cluster, Lahore is as follows:

Sr. No.	Activities	Time Frame	Expenses (Pak Rs)					Implementer
			PAAPAM	SMEDA	UNIDO	EPB	Others	
1	Awareness workshops/seminars	Feb - Mar 2006	50,000	50,000	50,000			SMEDA & UNIDO
2	Development of master plan to set clear vision, mission and direction for auto parts industry in the next 5 years	Feb - Aug 2006	40,000	10,000				PAAPAM & SMEDA
3	Creation of 2 networks	Feb - Dec 2006					200,000	
4	Creation of linkages with international Business Support Organizations	Jan - Dec 2006	50,000	50,000		100,000	100,000	SMEDA
5	Training Need Assessment of the Cluster	Feb - Mar 2006	50,000	100,000				SMEDA
6	Capacity building plan of PAAPAM	Mar - Sep 2006			15,000			SMEDA
7	Training programs	Aug - Dec 2006					100,000	SMEDA
8	Linkages with support institutions	Jul - Dec 2006	50,000		50,000	50,000		SMEDA
			240,000	300,000	115,000	150,000	400,000	
							1,205,00	