ISSN-2230-7540

Automobile Industry in India: Growth and Performance

Dr. Rajani Sharma*

House No. 172/28,

Prem Nagar, Ambala City – Haryana,

India – 134003

ABSTRACT

The Indian automobiles industry is witnessing a defining moment. More than six decades after its inception, the industry is on the threshold of a major leap forward, increasing scales and depth, considerable product variation and increasing acceptability of Indian products in regional and global markets are largely driving this surge. India is fast emerging as a credible and the large outsourcing hub for automobiles and auto component industry. In this paper the automobile industry has been divided into 3 eras: - Antique, Classic and Modern Era which also divided into sub-eras. It also focuses on the growth and performance of automobiles industry in India.

INTRODUCTION

The journey of humans on the road of mechanized transport began with the invention of wheel in 4000 B.C. The discovery of the wheel was a stepping stone to the revolution which was to occur in mechanical developments. Since then he continually sought to devise on automated, labour saving machine to replace the horse. During early years, it developed mainly in Europe and America and then spread into the rest of the world. On the basis of major design and technology shifts, the world automotive history is generally divided into a number of eras. Although the exact boundaries of each era can be hazy, Scholarship has categorized them as follows:-

Automobile Eras

<table>
<tr><th>Before 1890s</th><th>1890s</th><th>1900s, 1910s</th><th>1920s</th><th colspan="2">1930s, 1940s, 1950s</th><th>1960s, 1970s, 1980s, 1990s, 2000s</th></tr>
<tr><td>Ears of Invention</td><td>Venteran Era</td><td>Brass or Edwardian</td><td>Vintage Era</td><td>Pre-war Era</td><td rowspan="2">Post-War Era</td><td rowspan="3">Modern Era</td></tr>
<tr><td colspan="4">Antique</td></tr>
<tr><td colspan="5">Classic</td></tr>
</table>

ISSN-2230-7540

Era of Invention:

Several Italians developed designs for wind driven vehicles. The first vehicle was introduced by Guido da vigenvano in 1335. It was a windmill type drive to gears and thus to wheels. Later Leonardo da Vinci designed clockwork driven tricycle with tiller steering and a differential mechanism between the rear wheels. Then, a Flemish priest, Ferdinand verbiest demonstrated in 1678 a small steam car for the Chinese Emperor Chien Lung. French Army Captain Nicholas Joseph Cugnot was the inventor of the first self-propelled land vehicle in the year 1769. In 1805, a mobile steam dredge was produced by Oliver Evans of Philadelphia. Francois Isaac de Rivaz designed the first "Internal Combustion Engine", in 1807, using a mixture of hydrogen and oxygen to generate energy. He used this engine to develop a car, and the occasion was historic. This was the first vehicle to run on an internal combustion engine. The first successful internal combustion engine was a two-stroke gas driven engine patented by Jean Joseph Etienne Lenoir of Belgium in 1860. In 1862, he again built an experimental vehicle by his gas-engine. He drove it from Paris to Joinville. Nikolaus August Otto and Langen invented the first practical “four-stroke” engine in 1876, and a large number of engines were produced under the patent of Otto and Langen in Europe. Then, Charles and Frank Duryear built the first gasoline powered car in 1893 after several small changes to Lenoier’s design.

In America, similar combustion engines started to be manufactured for lumbering, pumping, power generation and marine use. It was not long before men were thinking with the idea of using such as engine could also be used for carriage purposes. This idea took concrete shape in Europe where Gottlieb Daimler manufactured the world’s first motor cycle and motor boat in 1882. Then, in the year of 1885 Karl Benz built his first true automobile (Petrol engine) in Mannheim. Benz was granted a patent for his automobile on January 29, 1886 and began the first production of automobiles in 1888. Later, Gottlieb Daimler and Wilhelm Maybach in Stuttgart in 1889 designed a vehicle from scratch to be an automobile rather than a horse carriage fitted with an engine. By this time, however, the world ‘automobile’ had not even coined. But the idea of practical self-propelled vehicle had already captured the imagination of many men, both in Europe and United States.

Veteran Era:

Carl Benz and Gottlieb Daimler shared the credit of changing the transport habit of the world, for their efforts laid the foundation of the great motor industry as we know it today. In the early 1900s, the automobile industry was chiefly concerned with developing a product that would at least operate. Gradually, however, technical advances were recorded both in Europe and United States. France too had joined the motoring scenario by 1890 when two Frenchmen Panhard and Lavassor begun producing automobiles powered by Daimler engine. Two years later, they were quickly followed by Peugeot. In the United States, brothers Charles and Frank Duryea founded the Duryea Motor Wagon company in 1893, which became the first American automobile manufacturing company. They built the first gasoline powered car in America. Henry Ford had an engine running by 1893 but it was 1896 before he built his first car. Ford formed the Detroit Automobile Company in 1899. During this era, three kinds of power sources were being used: - Steam engine, gasoline or petrol engines and electric motors. Further, automobiles were seen as more of novelty than a genuinely useful device. Major breakthroughs in proving the usefulness of the automobile came with the historic long- distance drive of Bertha Benz in 1888 when she traveled more than 50 miles from Mannheim to Pforzheim.

The Brass Era:

This era lasted from roughly 1905 through to the beginning of World War-I in 1914. Within this decade, various experimental designs and alternate power systems got marginalized. Henry Ford revolutionized the manufacture of automobile with his assembly-line style of production and brought out the Model-T. This model was inexpensive, versatile and easy to maintain. In 1910, Mercer Raceabout built the first sports car. At that time, development of automotive technology was quite rapid. A large number of small manufacturers were competing to gain the world’s attention. During this era, the key developments were as follow: - electric ignition (by Robert Bosch, 1903) and the electric self-starter (by Charles Kettering, for the Cadillac Motor Company in 1910-1911), independent suspension, and four-wheel brakes.

Vintage Era:

The Vintage Era lasted from the end of World War-I (1919) throughout the stock market crash at the end of 1929. During this period, the front-engine car came into existence with closed bodies. Two different car makers, Herbert Austin and William Morris introduced mass production methods of assembly in the U.K. Austin seven was the world’s first practical four seater 'body car' which could be afforded by thousands of people. During this era, some more successful models

ISSN-2230-7540

such as Bugatti Type-35 (1924-1929), Ford Model-A (1927-31), Cadillac V-16 (1930) were developed.

Pre-War Era:

The pre-war part of the classic era began with the great depression in 1930 and ended with the recovery after World War-II commonly placed at 1948. During this period, integrated fenders and fully closed bodies begun to be manufactured. Automobile manufacturers in the 1930s and 1940s refined and improved on the principle of Ford and other pioneers. Henry Ford introduced his powerful flathead V-8 in his main stream model in 1932-1948. Some popular inventions were made, i.e. Bugatti type-57 (1934-40), Citroen Traction Avant (1934-56), MG T Series (1936-55) etc. Volkswagen-Beetle (1938-2003) was the most famous automobile then emerged during this era.

Post-War Era:

Automobile design finally emerged from the shadow of World War-II in 1949, the year in which the United States saw the introduction of high-compression V8 engines and modern bodies from General Motors' Oldsmobile and Cadillac brands. Throughout the 1950s, engine power and vehicle speeds rose, designs became more integrated and artful, and cars spread across the world. Alec Issigonis' Mini and Fiat's 500 mini cars swept Europe, while the similar Keicar class put Japan on wheels for the first time. The automobile market changed somewhat in the 1960s, as Detroit began to worry about foreign competition because the European makers adopted even-higher technology, and Japan started as a serious car producing nation. On the technological front, the biggest developments of the era were the widespread use of independent suspensions, wider application of full injection and an increasing focus on safety in design of automobiles.

The Modern Era:

The Modern era is normally defined as the 25 years proceeding the current year. The modern era has been one of the increasing standardization, platform sharing, and computer-aided designs. Body styles have changed as well in the modern era. In this era, every type of vehicle has been produced, i.e. front-wheel drive, all wheel drive and multi-utility vehicle, sports car etc. Full efficiency and petrol engine has been used rapidly in this era. In the mid-1990's, global trade has been increasing which enabled the growth of commercial distribution systems, and also raised global competition amongst the automobile manufacturers. Now automobiles have become increasingly popular among the general population as it gave travelers the freedom to travel. As a result cars became less luxury and more of a necessity.

Development of Automobile Industry in India

The Indian automobiles Industry has had a chequered history of more than six decades. The industry comprises of automobile and the auto component sectors and encompasses commercial vehicles, multi-utility vehicles, passenger cars, two-wheelers, three wheelers, tractors and related auto components.

The evolution and development of the Indian automobile industry can be viewed in terms of four qualitatively distinct periods:-

(i) Automobiles in Pre-Independence Era.

(ii) Automobiles in Post-Independence Era-Phase-I (till 1980).

(iii) Automobiles in Post-Independence Era-Phase-II (1980-90s).

(iv) Automobiles in Post-Independence Era-Phase-III (1990s on words).

(i) Automobiles in Pre-independence era:

The first motor car on the streets of India was seen in 1898. From 1898 to last 1920s, India remained dependent on imports from the United States and Europe for automobiles. The second phase of the development of automobile industry started in 1928, when the 'General Motors India Ltd' set up a plant in Bombay to assemble trucks and cars from components and parts imported from U.S.A. 'Ford Motor Co. of India Ltd' also established its assembly units at Madras, Bombay & Calcutta in 1931. The complete manufacturing of motor vehicles in India started after the establishment of 'Hindustan Motors Ltd' in 1942 and Premier Automobiles Ltd in 1944.

ISSN-2230-7540

(ii) Post-Independence Era – Phase I (Till 1980):

During this era, firms such as Ashok Leyland Ltd, Standard Motor Products of India Ltd etc. entered into the market. To encourage indigenous manufacturing, the Government of India (GOI) set up tariff commission in 1952. The commission recommended that, "Only those firms which had manufacturing facilities should be allowed to operate and those units which were merely assembling imported completely knocked down (c.k.d.) condition vehicles to stop their business within a period of three years." Consequently, General Motors, Ford and other assemblers closed their operations in the country. Therefore, by the end of 1955, there were only six licensed automobile manufacturers such as Hindustan Motors Ltd in Calcutta, Premier Automobile Ltd in Bombay, Standard Motor products of India Ltd in Madras, Ashok Leyland in Madras, Mahindra & Mahindra Ltd in Bombay and Tata Locomotive and Engineering Co. Ltd in Bombay.

The early 1950s saw the entry of firms in the two wheeler segment. In a short period of time, significant growth has been shown in this segment especially in 'Mopeds'. The rapid growth of middle class was the primary reason for the growth of the two wheeler segment. GOI also entered the industry after signing of agreement with M. A. N. of Germany and Nissan Co. of Japan. In the middle of 1960s, India started to export cars and Jeeps to twelve countries. In 1970s the Indian automobile Industry became independent of technical collaborations for complete vehicles and achieved self reliance. Further, the unanticipated oil shocks of 1973 and 1979 created problems of demand, disturbing the situation created by high costs, heavy taxation and general reversionary conditions in the economy.

Thus, there were ups and downs in the industry during the phase-I. On the whole, during this era, the Indian automobile industry remained protected by Govt. through licenses, high customs duty on import, steep excise duty and sales tax etc. These policy parameters limited the growth rate of the industry.

(iii) Post Independence Era- Phase II (1980-1990s):

This phase may be categorized as the period of foreign collaborations & better capacity utilization. The Maruti Udyog Ltd (MUL) was set up in 1983 in collaboration with Suzuki Motor Co. of Japan to produce cars, vans and jeeps. The production of M.U.L. became an instant hit because of its high fuel efficiency, impressive esthetics and new standards of performance. With the establishment of MUL, the composition in the Indian passenger car market has been increased. The major step taken by the GOI was to adopt a more liberalized economic policy. Consequently, new collaborations came into existence mainly in relation to the production of light commercial vehicles, two-wheelers and passenger cars. It encouraged many multinational automakers from Japan, U.S.A. and Europe to enter the Indian market mainly through Joint venture with Indian firms. The new joint ventures were DCM-Toyota, Swaraj-Mazda, Allwyn-Nissan, Eicher-Mitsubishi, Hero-Honda, Kinetic-Honda, TVS-Suzuki, Maruti-Suzuki, HML-Isuzu Motors and PAL-Nissan Motors Co. Ltd. The Government of India announced a new piecemeal policy in 1985 to enable the better utilization of installed capacities and achieve larger volume of production. According to this policy, any manufacture can manufacture all classes of wheeled automobile, any desired engine size and specification without new license. This policy helped to keep low capital output ratio in the industry. It resulted into increased output and increased sales in both domestic & overseas markets. As a result of semi liberalization, the flood of new entrants into the auto industry had led to a complete transformation of the sector.

(iv) Post Independence Era- Phase III (90s on wards):

In 1991, government of India announced a new economic policy thereby making India a deregulated economy. Indian automobile industry had also been delicensed and foreign investment up to 51 percent had been allowed in this sector. Further, the reduction in import duties on automobile components for a major boost to the industry. As a result of this new automobile policy many foreign players entered the Indian market through joint ventures and collaborations. These include DCM Daewoo, Sipani-Rover, Hindustan Motors-General Motors, Mahindra–Ford, Tata-Daimller Benz, Premier Automobile Ltd-Peugeot, Maruti-Suzuki and Eicher-Volkswagen. On February, 2000, an automatic approval for FDI/NRI/OCB investment was permitted in the automobile sector. Quantitative restrictions have been removed by GOI in April 2001 resulted into free imports of vehicles. The growing significance of the automobile industry in Indian economy led the Indian government to declare a separate Auto policy in March 2002. In 2002, the Planning Commission appointed a working group on the automotive industry to project the industry's growth during the tenth five year plan period (2002-07).

Classification of Automobile Vehicles

The Indian automotive industry produces a wide variety of vehicles such as passenger cars, light, medium and heavy

ISSN-2230-7540

commercials vehicles, multi utility vehicles i.e. jeeps, vans, two wheelers, three wheelers, tractors and other agricultural equipment etc. These are show in figure 1.1. In the present time, the Indian automobile industry has matured greatly. It has become one of the largest industries in India, witnessing impressive growth during the last two decades. With the gradual liberalization of the automobile sector since 1991, the number of manufacturing facilities in India has now grown to 15 manufacturers of passenger cars and multi utility vehicles, 9 manufacturers of commercial vehicles,14 manufacturers of two/three wheelers and 14 manufacturers of tractors [Economic Survey, 2005-06]. The passenger cars transactions in domestic market have surged to 145,905 units in Jan 2010 against the sale of 110,300 units in 2009. In Jan 2010, the total sales of automobiles grew to 1,114,156 units. Table 1.1 shows the production of different categories of vehicles in India.

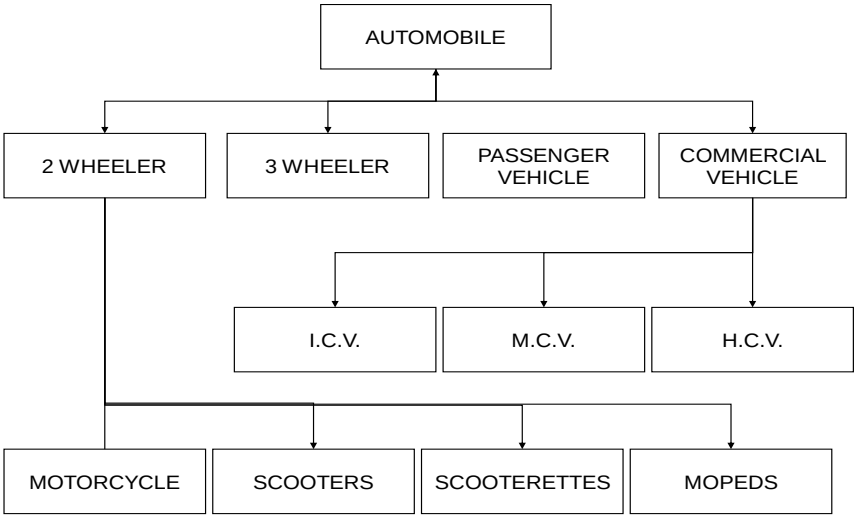

Figure 1.1

It is evident from table 1.1 that total production of the automobile vehicles has been continuously increasing since 1950. The production of the automobiles showed an encouraging sprint in 1980, while it witnessed a sluggish development in the first three decades after independence. Total production of the automobiles was 4, 112 units in 1950 which had grown to 13, 96, 136 units and 17, 14, 220 units in 1985 & 1990 respectively. Now, the production of automobile has increased to 1,78, 92,427units in 2010-11.

Table-1.1

Production of Different Categories of Vehicles (in numbers)

Years	Passenger Vehicles	CVs	2-Wheelers	3-Wheelers	Total
1950	2221	1891	-	-	4112
1955	12865	9262	952	3	23082
1960	24598	27518	16878	496	69490
1965	35273	37401	49122	1884	123680
1970	44539	40973	113047	4229	202788
1975	31246	42834	207697	12223	294000
1980	45606	68311	417607	26519	558043

ISSN-2230-7540

1985	129332	101779	1115758	49267	1396136
1990	244932	92648	1290878	85762	1714220
1995-96	417000	113000	2660000	160000	3350000
1996-97	544000	125000	2980000	220000	3869000
1997-98	535000	1,12,000	3070000	230000	3535000
1998-99	504037	135891	3374508	209033	4223469
1999-00	701550	173521	3778011	205543	4858625
2000-01	640934	156706	3758518	203234	4759392
2001-02	669719	162508	4271327	212748	5316302
2002-03	723330	203697	5076221	276719	6279967
2003-04	988540	275224	5624950	340729	7229443
2004-05	1209654	350033	6526547	374414	8460648
2005-06	1308913	391078	7600801	434424	9735216
2006-07	1545000	520000	8444000	556000	11065000
2007-08	1773000	545000	8000000	500660	10888000
2008-09	1838593	416870	8419792	497020	11172275
2009-10	2357411	567556	10512903	619194	14057064
2010-11	2982772	760753	13349349	799553	17892427
Total	**19310065**	**5431454**	**100658866**	**6019654**	**131077379**

Sources: 1950-80 from Commerce Research Bureau, 1985-95 from Automotive Component Manufactures in India, 1995-96 to 2010-11 from Ministry of Heavy industries and public Enterprise.

The automotive industry crossed a landmark with total vehicles production of more than 10 million in 2007-08. According to Society of Indian Automobile Manufacturers (SIAM) the cumulative growth rate of passenger car market is 32.28 percent in 2010-11. The share of passenger car has been increasing after the entry of MUL. This changed the industry's profile dramatically. The de-licensing and removal of quantitative restrictions on imports opened the gates to international automakers into the country with an idea to tap the larger population.

Further, the table also indicates that production trend is now more in favour of the two wheelers segment. Two-wheelers enjoyed around 72 percent market share during 1995-96. The production of two-wheeler segment grew by 18.9 percent 2007-08. The primary reason for this growth of two-wheeler industry is the rapid growth of middle class section in the society.

Figures 1.2, 1.3, 1.4 and 1.5 show the vehicles production of other segments including passenger vehicles, commercial vehicles, two wheelers and three wheeler respectively. The commercial vehicles and three wheelers segment clocked a growth rate of 41 % in 2010-11.

ISSN-2230-7540

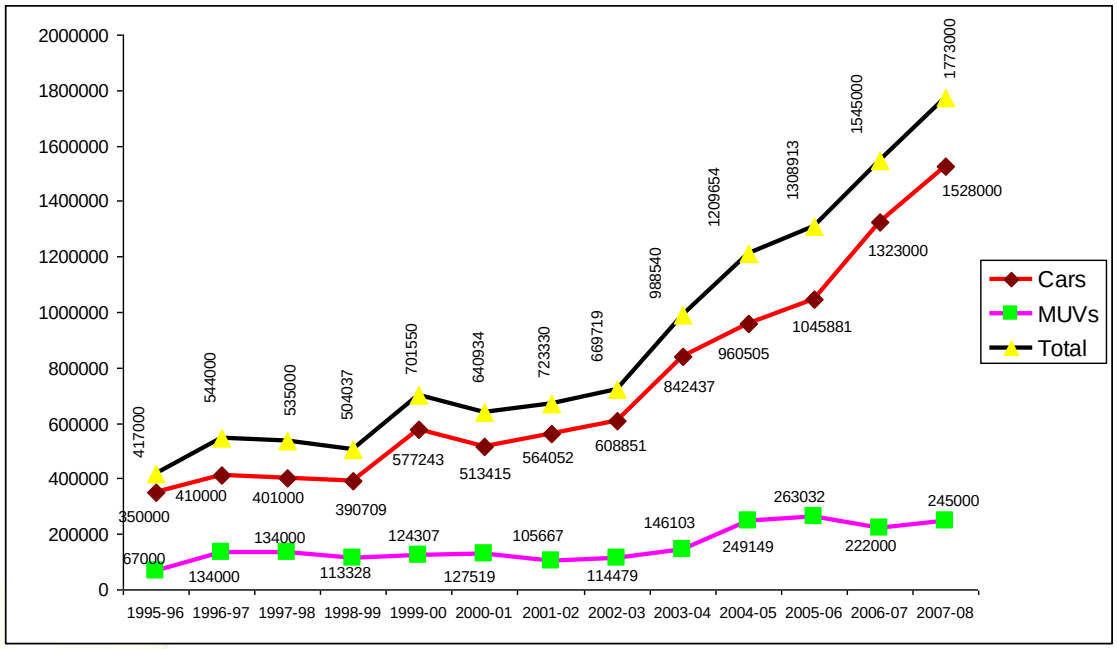

Figure 1.2: Passenger Vehicles Production (Qty. in Nos.)

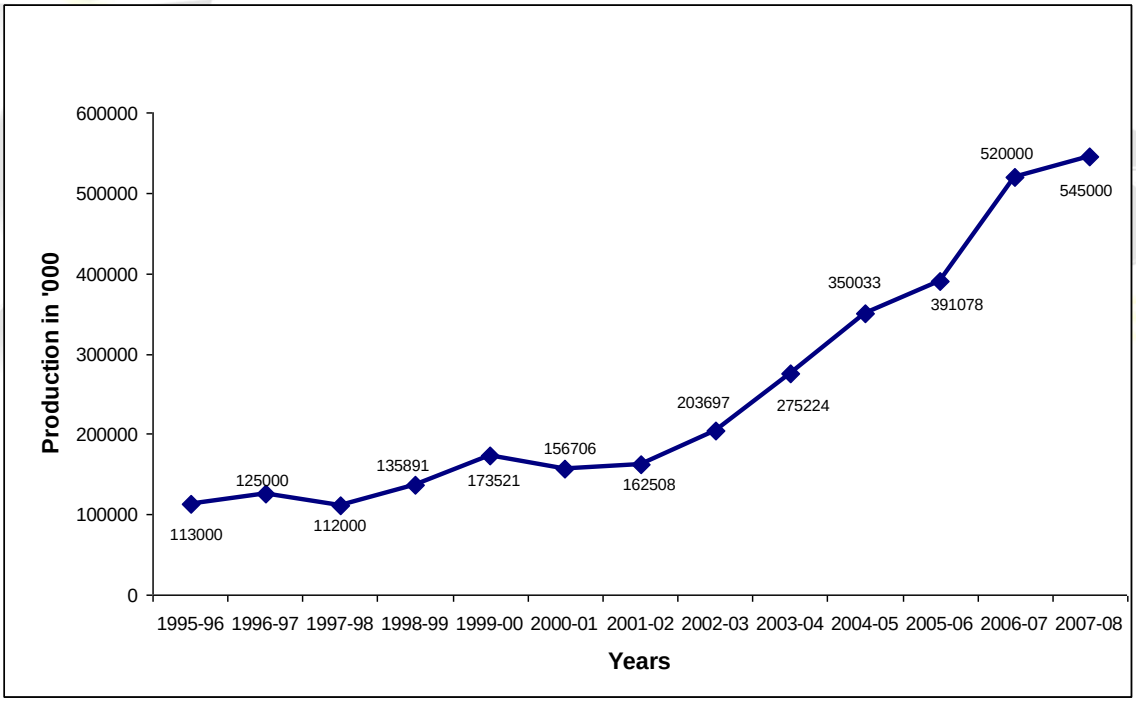

Figure 1.3: Commercial Vehicles Production (Qty. in Nos.)

ISSN-2230-7540

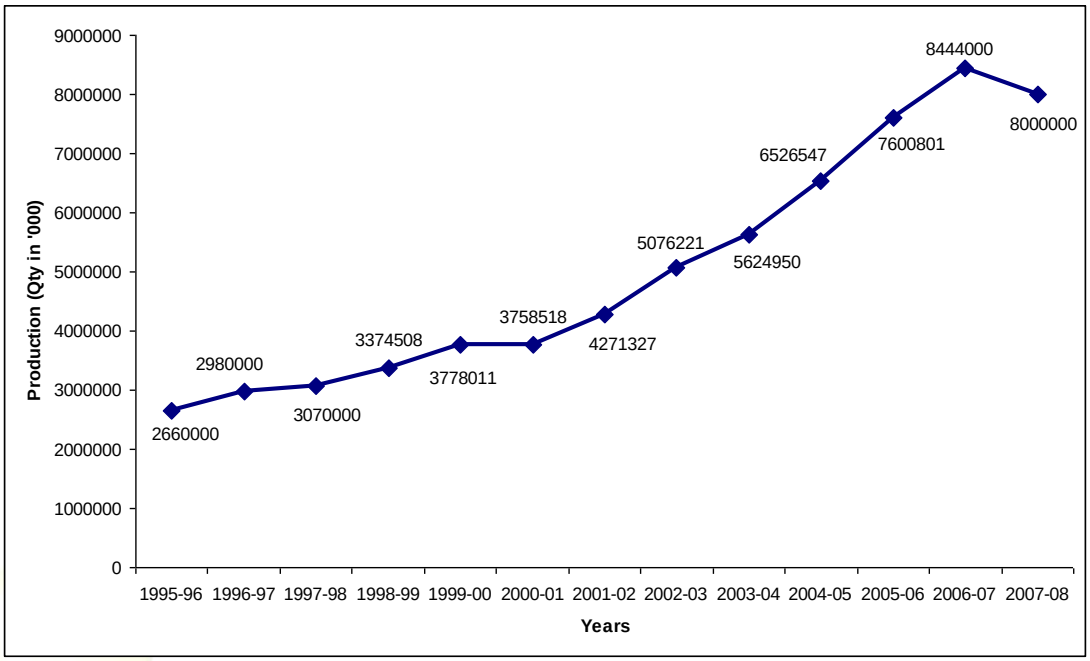

Figure 1.4: Two-Wheelers Production (Qty. in Nos.)

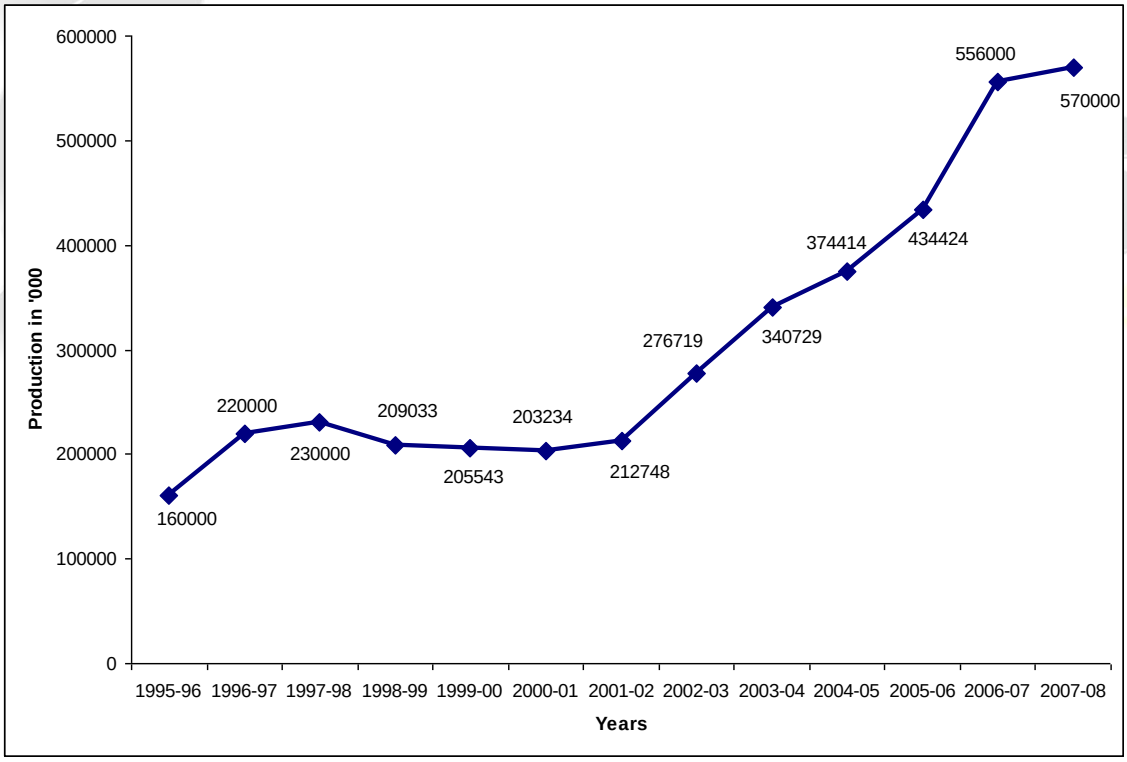

Figure 1.5: Three-Wheelers Production (Qty. in Nos.)

Installed Capacity

A robust manufacturing capacity has been installed by the Indian automobile industry over the last two decades. The installed capacity in different segments of automobile industry is as under:-

ISSN-2230-7540

Table-1.2

Installed Capacity in Different Segments

(In million)

Segment	Installed Capacity	
	2003-04	2004-05
Four Wheelers	1.51	1.72
Two & Three Wheelers	7.83	10.85
Grand Total	9.34	10.85

Source : SIAM

Exports

The automobile industry in India has also made a significant contribution towards increasing the foreign exchange in the economy. However, the export performance of the industry has been inconsistent in spite of various incentives extended by the government since liberalization. Worldwide recession, transfer of outdated technology by world majors and lack of technological support to adhere to pollution control and safety norms were some of the factors responsible for low growth in exports. The exports have grown consistently and reached $4.5 billion in 2009, with the United Kingdom being India's largest exports market.

Table 1.3 indicates that India's automobile exports have been growing at a compound average growth rate (CAGR) of over 40 per cent per annum during the last five years. These exports grew from 1, 84,680 units in 2001-02 to 12, 38,499 units in 2007-08. The automobile exports crossed US $ 1 billion mark in 2003-04 and reached US $ 2.76 billion in 2006-07. The industry exported over 15 per cent passenger cars produced in 2006-07, almost 10 per cent of the commercial vehicles, 26 per cent of the three-wheelers and 7 per cent of the two-wheelers.

Multinational car manufacturers have been using their Indian facilities to cater to the international markets. In passenger car segment, the growth rate was high in 1995-96 and 1996-97, but thereafter it declined in the next four years. This

Table-1.3

Exports of Different Categories of Vehicles in India in Units

Years	Cars	MUVs	CVs	2-Wheelers	3-Wheelers	Total
1995-96	35489	2219	10456	111043	18798	178005
1996-97	37161	2,484	13836	124728	21973	200182
1997-98	29705	3288	14084	125504	18595	191176
1998-99	25468	2654	10108	100002	21138	159370
1999-00	23271	5148	9912	83272	18388	139991
2000-01	22990	4122	13770	111138	16263	168283
2001-02	50088	3077	11870	104183	15462	184680
2002-03	70828	1177	12255	179682	43366	307308
2003-04	126249	3067	17227	264669	68138	479350
2004-05	160677	5736	29949	366724	66801	629887
2005-06	170193	5579	40581	513256	76885	806494

ISSN-2230-7540

2006-07	194452	4000	49537	619644	143896	1011529
2007-08	214143	4275	58999	819847	141235	1238499
Total	1160714	46826	292584	3523692	670938	5694754

Source: SIAM

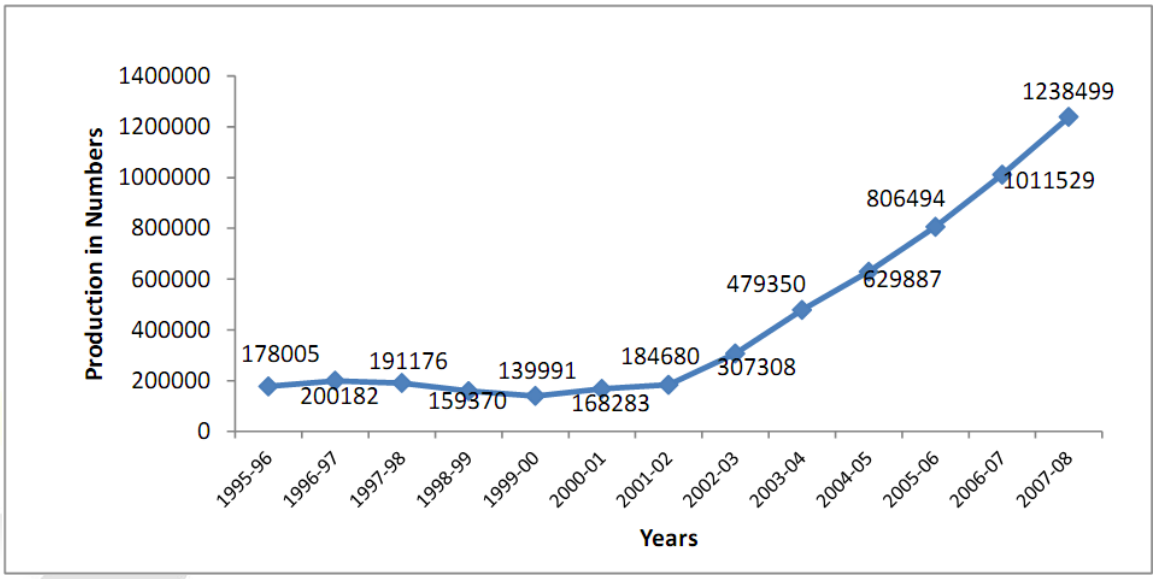

Figure: 1.6: Total Exports of Vehicles in India (Qty. in Nos.)

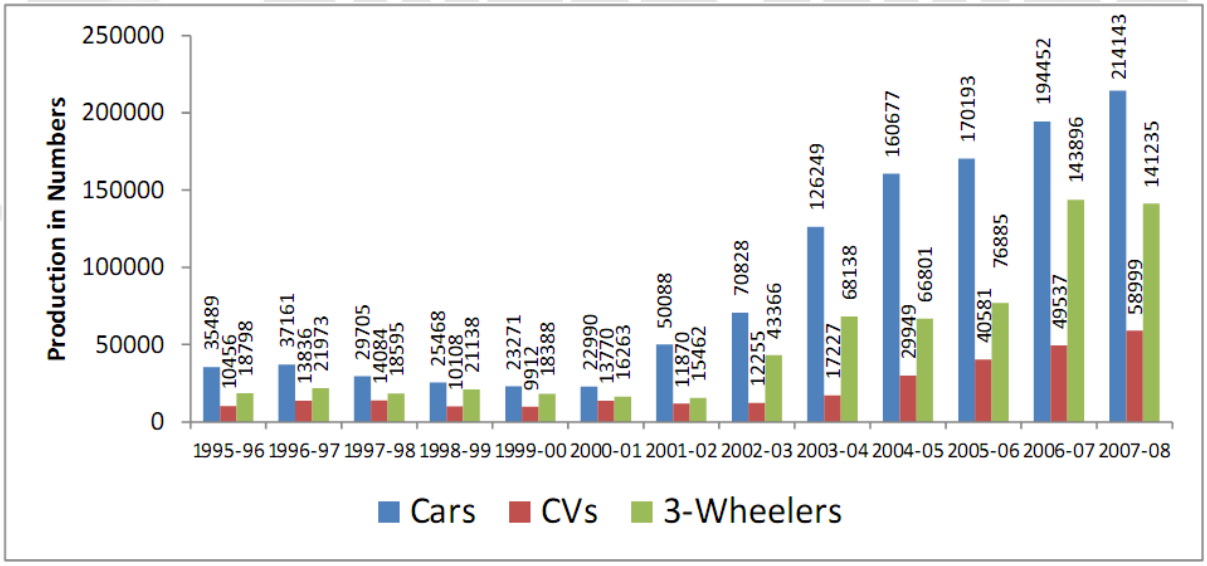

Figure: 1.7: Exports of Car, 3-Wheelers and CVs Segments (Qty. in Nos.)

ISSN-2230-7540

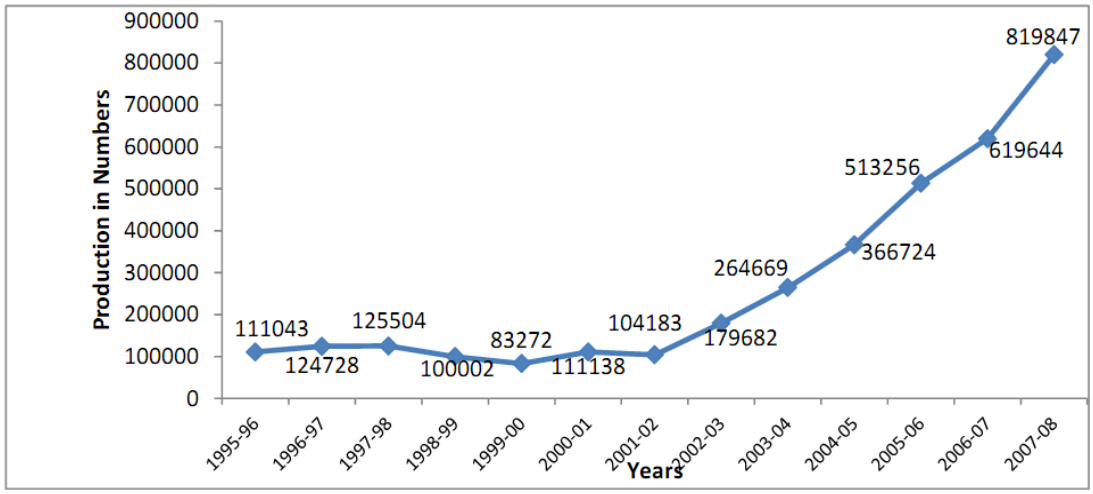

Figure: 1.8: Exports of 2-Wheelers Production (Qty. in Nos.)

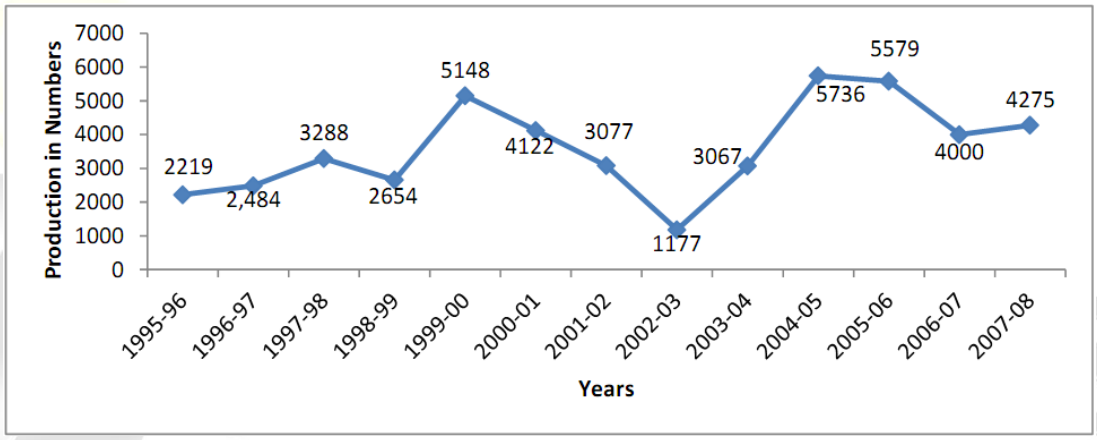

Figure : 1.9: Exports of MUVs Production (Qty. in Nos.)

is also true for multi-utility vehicles, two and four wheelers. After a temporary slump 1998-99 and 1999-2000, exports registered robust growth in the subsequent years. Indian automobiles are being exported mainly to the following countries:-

Table-1.4

Main Indian Export Destinations

Cars	Egypt, Kenya, Nigeria, Somalia, Tanzania, Afghanistan, Nepal, Turkey, Hungary, Greece, Italy, Netherlands, Spain, Austria, Malta
CVs	Egypt, African countries, Nepal, Sri Lanka, Jordan, Kuwait, Hungary, Russian Federation, France, Brazil
Two-wheelers	African countries; Bangladesh; Sri Lanka; Turkey; United Arab Emirates; Paraguay; United Kingdom; Germany; Argentina; Mexico; Australia; Hong Kong, China

In order to realize the growth potential of Indian automobile industry in both domestic and global market and to optimize its contribution to the national economy, the Development Council for Automobile and Allied Industries has decided to draw up a Ten year Mission Plan under the title “Automotive Mission Plan (APM)” for the development of the Indian automotive sector into a global hub. The AMP has 25 key recommendations focused at attracting an incremental investment of Rs. 1, 60,000 – 1, 18,000 cr. (US $ 35 to US $ 40 Billion) over the next 10 years. The turnover of industry would be 6, 67,000 cr. in 2016, which is 4 times the current turnover. A key addition to the earlier document was the

ISSN-2230-7540

setting up of a monitoring committee to regularly review the progress of the implementation of the AMP. It clearly indicates the commitment of the government towards the growth and development of the automotive industry in India.

With increased competition, established automobile manufactures in India are becoming more conscious about technology and quality. India has also joined WP–29: 1998 agreement for global harmonization of automotive standards i.e. Safety, Emission and Beyond. Indian automobile firms are incorporating ISO 9000 certification and Total Quality Management as explicit corporate goals.

Future Projections

As per as estimates of SIAM, the automotive industry in India will grow rapidly in the next 10 years. This projection is based on the inputs from the experts and the studies conducted by professional agencies.

Table-1.5

Forecasted CAGR for different segments of vehicles

Vehicles	CAGRs (in percentage)
Passenger Cars	10
Multi Utility Vehicles	8
M & HCVs	6
LCVs	9
Scooters	3
Motorcycles	18
Mopeds	7.5
Three Wheelers	11
Tractors	8.5

Source: SIAM

On the basis of estimated CAGR, it is expected that Indian automobile vehicles will grow as mentioned in the table 1.5.

India is able to maintain its eminent position of the largest tractor and three wheelers manufacture in the world and the world' second largest two wheeler manufacturer. By 2012, India would emerge as the world's 8th/9th largest car producer (at present India is 11th largest) and retain 4th largest position in world truck manufacturing sector. According to ACMA, India has the potential to become one of the top 5 automotive economies by 2025 (see Figure 1.10).

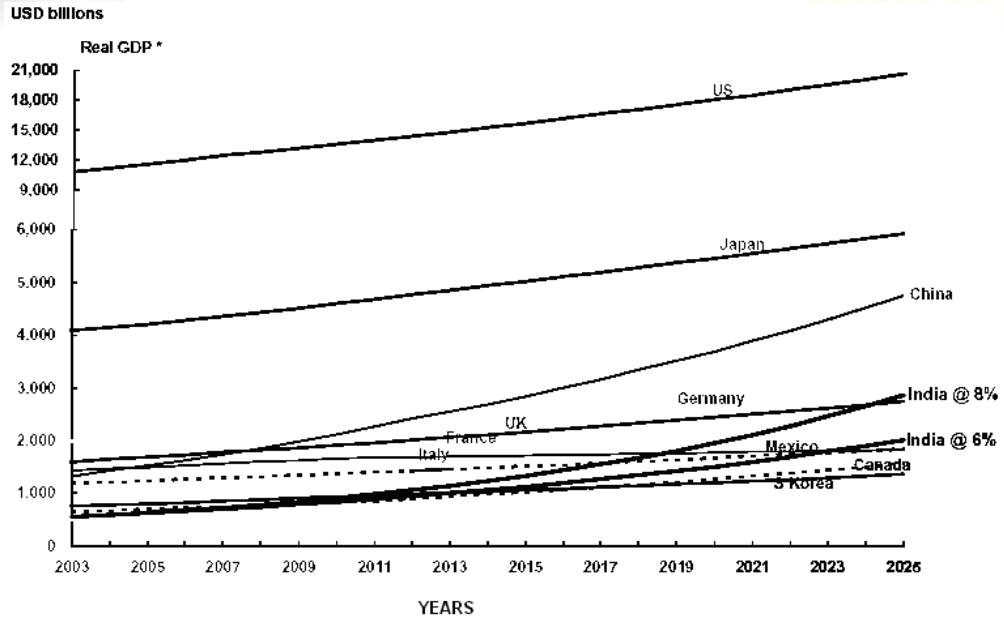

Figure : 1:10: Top 5 Automotive Economies

ISSN-2230-7540

REFERENCES

A. Santosh Kumari, D. Raghunatha Reddy and M. L. Kameswari, (Oct., 2005). "Consumer Buying Behaviour in Two-Wheeler Industry: With special reference to Hero Honda Motorbikes", Indian Journal of Marketing, Vol. XXXV, No. 10, pp. 12-18.

Copeland, Thomas E. and Khoury, Nabil T., (1980). "Analysis of Credit Extension in a World with Uncertainty", 1973 in K. V. Smith, "Readings on the Management of Working Capital", West Publishing Company, U. S.

Krishnan, Viswanathan (2007). "Indian Automotive Industry: Opportunities and Challenges Posed by Recent Developments",site: www.zigwheels.com

Mukherjee, Avinandan, (2007). "The Indian Automobile Industry: Speeding into the Future", website: www.zigwheels.com.

Ramu, M. L. V., (1984). "Automobile Production in India", Productivity, Vol. XXV, No. 3, pp. 371-377.

Committee on Accounting Procedure, (June, 1953). "Research Bulletin 43", American Institute of Accountants, New York, p. 27.

Karim, Bazle and Bahadur, (July-Aug., 1978). "Spares Parts Management in Public Enterprises", Lok Udyog.

Kathuria, Sanjay, (Oct., 1987). "Commercial Vehicles Industry in India", Economic and Political Weekly, Vol. 22, No. 42 and 43, p. 1809.

Rao, C. Bhaktavatsala, (July, 1992). "Indian Automobile Industry: Patterns of Expansion, Entry and Performance", MDI, Management Journal, Vol. 5, No.2. pp. 97-111.

Piplai, Tapas, (28 July 2001). "Automobile Industry: Shifting Strategic Focus", Economic and Political Weekly, pp. 2892-2897.

Chaturvedi, Sunil, (Oct-Dec., 2003); "Indian Automobile Industry: Challenges and Prospects", Productivity, Vol. 44, No. 3, pp. 345-357.

Kannan, A. M., (Oct-Dec., 2003). "Best Practices in the Automobile Industry", Productivity, Vol. 44, No. 3, pp. 359-362.

Babu, Madikonda Kishore and Reddy, D. Raghunatha, (Oct., 2004). "A Study on Passenger Car Industry In India", Indian Journal of Marketing, Vol. XXXIV, No. 10, pp. 10-16.

Arora, A. Indu, (21 Nov., 1981). "Automobile – A New Dynamism", Commerce, Vol. 143, pp. 3-10.

Corresponding Author

Dr. Rajani Sharma*

House No. 172/28, Prem Nagar, Ambala City – Haryana, India – 134003

E-Mail – arora.kips@gmail.com