

**“Size and Growth of Firms in Automobile
Industry in India : A Case Study of
a Few Indian Automobile Firms”**

A Thesis
Submitted to the University of Pune

For the Degree of
Doctor of Philosophy in Economics

By
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Under the Guidance of
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June, 2008



CERTIFICATE

This is certify that the work is incorporated in the thesis entitled "**Size and Growth of Firms in Automobile Industry in India : A case study of a few Indian Automobile Firms**" submitted to the University of Pune by **Shakeel Ahmed** for the award of Doctor of Philosophy was carried out by him under my supervision from June, 2001 to May, 2008. Such material as has been obtained from the other sources has been duly acknowledged in the thesis.

Place: Pune

Date: 06.06.2008

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DECLARATION

I declare that my thesis on the topic entitled “**Size and Growth of Firms in Automobile Industry in India : A Case Study of a Few Indian Automobile Firms**” is submitted for the award of the **Degree of Doctor of Philosophy in Economics**, to the Dept. of Economics, University of Pune, Ganeshkhind, Pune – 411 007.

This thesis has not been submitted by me elsewhere for the award of any degree or diploma – part or full. The information gathered by me elsewhere for the thesis is original, true and factual. Such material as has been obtained from other sources has been duly acknowledged in the thesis.

Place : Pune

Date : 06.06.2008



SHAKEEL AHMED

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ABBREVIATIONS

ACMA	The Automobile Components Manufacturers Association
AIFM	The Association of Indian Automobile Manufacturers
ASEAN	Association of Southeast Asian Nations
CBU	Completely Built Units
CIF	Cost Insurance Freight
CKD	Completely Knocked Down
CMUR	Central Motor Vehicle Rules
CV	Commercial Vehicles
DGFT	Director General of Foreign Trade
DMI	Daewoo Motor India
EM	Eicher Motors
FADA	The Federation of Automobile Dealers Association.
FERA	Foreign Exchange Regulation Act
GMI	General Motors India
H.M.	Hindustan Motors
HH	Hero Honda
HMI	Hyundai Motor India
KIEN	Kinetic Engineering
LCVS	Light Commercial Vehicles
M & M	Mahindra & Mahindra
M&HCVS	Medium & Heavy Commercial Vehicles
MAHS	Maharashtra Scooters
MNCS	Multinational Corporations
M RTP	Monopolies Restrictive and Trade Practices
MUL	Maruti Udyog Ltd.
MUVS	Multi purpose vehicles
NIP	The New Industrial Policy
PAL	Pemier Automobile India Ltd.
QRS	Quantitative Restrictions

SAARC	South Asian Association of Regional Cooperation
SIAMA	Society of Indian Automobile Manufacturers Association
SKD	Semi Knocked Down
SM	Swaraj Mazda
SOORJ A	Sooraj Automobile
SUV	Sport Utility Vehicles
WTO	World Trade Organization

Chapter - I

Introduction

Chapter - I

INTRODUCTION

1.1 BACKGROUND

The automobile industry in the country is one of the key sectors of the Indian economy. The Indian automobile industry has come a long way since the first car ran on the streets of Mumbai in the year 1898. The initial years of the industry were characterized by unfavorable government policies. The real drastic change in the industry, as we see it today, started to take place with the liberalization policies that the government initiated in the year 1991. These policies had a good impact on the Indian economy in general and the automobile industry in particular.

The Indian automobile industry is in a stark contrast to the global industry due to many factors related to India. The Indian automobile industry is very small in comparison to the global industry. Except for the two wheeler and tractor segments, the Indian industry cannot boast of big volumes vis-à-vis global one's.

The current study covers the various segments of the automobile industry including passenger cars, two/three wheelers, tractors, commercial vehicles and multi-utility vehicles. It attempts an in-depth analysis of the performance of the automobile industry in terms of production, sales, exports and imports for the past few years. The major events and their impact on the industry and across the segments are discussed in detail. The report also looks into the factors that boost the revenue growth across segments and concludes with a look at the financial performance of the major players in the industry.

In this chapter, an attempt is being made to analyse the historical development of the automobile industry in India. This chapter includes the discussion on significance of automobile industry, scope and objective,

hypothesis, and methodology of the study. We will also focus on the review of literature relating to the study and the chapter scheme.

An automobile is a self-propelled passenger vehicle designed to be operated on ordinary roads. The word automobile (“auto plus mobile”) means which is self-moving or moving by itself. It is self-propelling, carries its own power to move and it need not to be pushed or pulled. However, the automobile engine can not move by itself, nor can it be easily pulled or pushed, if there are no wheels to move.

Automobile industry is the barometer of economic, social and commercial progress that has transformed the entire world into one organised unit. It is, therefore, quite obvious that effective transport is indispensable for the economic progress of the country. Manufacturing, merchandising, banking, extracting and the like business; all depend upon transport activity. It is the motor transport which brings food grains purchased in distant places like Punjab, Haryana, and U.P etc and takes the same food grains to ultimate consumers. Automobiles have become an indispensable part of our lives and an extension of the human body that provides us faster, cheaper and more convenient mobility every passing day. Behind this betterment go the efforts of those in the industry, in the form of improvement through technological research. The study shows that an improved and efficient system of transport increases the wealth of a country, transforms the organisation of industries, raises the standard of living of its people, promotes cultural and political unity and strengthens national defence .

1.2 HISTORICAL PROFILE: AUTOMOBILE INDUSTRY IN INDIA

Though the first successful car was designed, manufactured and driven by Karl F. Benz of Mannheim in 1885 in Germany, it took about 60 years for the automobile industry to come to India.

The origin of the Indian automobile industry dates back to the mid-fifties, when the Late Walchand hirachand , in collaboration with Chrysler, US, started building Dodge trucks and De-sato cars at Kurla, Bombay. Almost at the time, the late G.D. Birla flagged off a Studebaker at Calcutta. But the most significant event occurred a decade later, when the then locomotive makers, Telco, unveiled Mercedes truck. Thus, India's first Automobile firm, Premier Auto Ltd (PAL) was set up by Walchand Hirachand (1882-1953) at Kurla in Bombay in 1944 with a paid up capital of Rs. 2.2 crores (\$1.8 million).

General Motors India Ltd. is said to have started assembling trucks and cars in 1928 from components and parts imported from U.S.A. in completely knocked down conditions in their factory at Bombay. Ford Motor Company of India Ltd. commenced assembling of vehicles at Madras in 1930 and at Bombay and Calcutta in 1931. Two Indian companies namely Hindustan Motors Ltd. and Premier Automobile Ltd. were incorporated in 1942 and 1949 respectively for the complete manufacturer of motor vehicles as distinct from assembly operation. Mahindra and Mahindra was a private limited company upto 15th June 1955. It was converted into a public limited company for the manufacture of jeeps and trucks.

Telco started its automobile division in October 1954. Bajaj Tempo was registered in 1958 as a private limited company. It was converted into a Public limited company in 1961 for the manufacture of commercial vehicle.

Peninsula Motor Corporation Ltd., Calcutta, however claims that their sister concern G. Machanize and Co. was the first to start assembling motor vehicles in India in 1926. The three automobile firms namely Hindustan Motors, Premier Automobiles and standard Motor products of India commenced the manufacturing of car in India.

Automobile commenced operation for the assembly of cars in March 1947. Due to the threat of partition in eastern India, Hindustan Motors could not decide on the location of its factory until 1947. Both companies installed plants on a scale, which was much in excess of potential demand in the immediate future hoping that demand would expand considerably in the coming years. The two firms enjoyed a complete monopoly of the market for almost 40 years until the entry of Maruti Udyog Limited. in 80's .The establishment of Hindustan Motor Limited was followed by PAL, and The Standard Motor Products Limited in 1948. Maruti Udyog Limited, Sepani, Automobile Limited and Telco followed much later. After remaining stagnant for four decades, the last decade has witnessed phenomenal growth with most Indian manufacturers entering into foreign collaborations. The Indian two-wheeler Industry made a modest beginning in the early 1945 when A.P.I. started manufacturing.

1.3 THE BEGINNING OF AUTOMOBILE MANUFACTURE IN INDIA

Margret Herdeck (1985) observed that the idea of forming an Indian automobile industry, first conceived in 1934 by Sir M. Visvesvaraya, Dewan of Mysore State did not receive the attention of most industrialist at that time and they opined that "importing foreign-made cars and selling them pays better than manufacturing them in India" Moreover, several America Companies, Ford and General Motors particularly, had their own Indian Companies which imported components from the U.S.A. they were getting considerable profits. The large profits made by foreign car companies proved to be the major obstacle to the manufacture of cars in India.

Nevertheless, by 1936 the Dewan of Mysore State had drawn up a proposal for an Indian car company and circulated among Indian industrialists. In 1939, the Government of Bombay, at that time under the control of the Indian Congress partly showed interest in the scheme. An experience and

reputable business house like Walchand Hirachand showed interest for the project under his banner. The World War II and the political turmoil within India delayed the project over the next five years. Walchand, however, was not deterred and he took initiatives by forming a company called "Indian Motor Limited", Bombay, with a managing agency of three partners: Walchand Hirachand, Dharamsey Mulraj Khatau and Tulsidas Kilachand. He made a proposal to have technical collaborations with foreign manufacturers such as Ford or Chrysler of U.S.A. and to purchase suitable land for the plant.

The new project faced a number of difficulties. Walchand was confident that new plant could not succeed without the help of the Government. He observed that German and Russian automobile firms succeeded with the help given by their respective governments. Walchand felt that the automobile industry is a core industry in industrial development. It should receive some help from the Indian Government otherwise it will not be possible to succeed. Unfortunately, the Indian Government did not quite consider Walchand's point of view. Moreover the Indian Government was not in a position to take on additional burdens during the World War and under the condition of growing domestic political turmoil.

During the World War II, the Indian Defence Forces needed all types of vehicles i.e. about 60,000 vehicles in 1940. Walchand thus proposed to the Government that he would undertake to construct 5,000 motor vehicle a year and supply them to the defence forces within nine months from the receipt of the order. But the Government was in urgent need of such vehicles in 1940. Hence Walchand could not get the fruits. Ford and General Motors were more capable of meeting the army's demand and therefore they were greatly benefited by this war.

Meanwhile the Birla group under the leadership of Mr. Brij Mohan Birla (1905-1982) was also trying to set up its automobile firm in India. He had considerable experience in Sugar, Paper and Insurance business. This

finally made Walchand more active to set up his plant for car manufacturing, which was finally established in 1944. It was felt by some leading businessman such as Sir Purushotamdas Shakurdas (1985) that it would be quite wasteful for two Indian business groups to invest so much capital in similar products when the market was likely to be limited/ The negotiations were held between the two Birlas and Doshis in 1942 with a view to merging the two automobile schemes, but no agreement could be settled.

1.4 HINDUSTAN MOTORS LIMITED

The Birla formed the Hindustan Motors Limited in Calcutta in 1942 with a paid up capital of Rs. 4.96 crores (\$4.1 Million). Thus the year 1942 stands as a landmark in the evolution of India's automobile industry. Hindustan Motors Limited has entered into technical collaboration with Morris Motors Limited, U.K. for the assembly and manufacture of cars and trucks in India. Due to the threat of partition in eastern India, Hindustan Motors could not decide on the location of factory until 1947.

1.5 PREMIER AUTOMOBILE LIMITED

Walchand Hirachand group formed the Premier Automobile Limited in Bombay in 1944 with a paid up capital of Rs. 2.2 corers (\$1.8 million). They started assembling cars and trucks from imported components in collaborations with M/s Chrysler Corporation of U.S.A.

Though the Birla had set up automobile firm earlier than the Walchand group; they were unable to start production until 1947 due to absence of necessary import permits from the Government of India.

Premier Automobile Limited commenced operation for the assembly of cars March 1947. PAL is the first automobile firm to start manufacturing of vehicles in India. Both companies installed plants on a scale, which was much in excess of potential demand in the immediate future, anticipating that

demand would expand considerably in the coming years. Both companies enjoyed a complete monopoly of the market for almost 40 years until the entry of Maruti cars.

1.6 POST INDEPENDENCE PERIOD

In addition to Hindustan Motors and PAL, the Government of India Permitted standard Motor Products of India Limited, Madras and Automobile Products of India Limited, Bombay for the manufacture of motor vehicles. In 1949, Standard Motor Products Limited was formed at Madras and in 1950, the firms started assembly of Standard Vanguard cars in collaboration with M/s Standard Motor Company, U.K. The Indian automobile firms grew only after the independence.

The only company manufacturing jeeps since independence is Mahindra and Mahindra (M&M). M&M imported jeeps from Willys Overhead Co. Ltd. (now American Motors), a company with whom M&M had earlier contacts. In 1947, 75 jeeps were imported in C.K.D. condition from Willys. The years were the birth of Automobiles in India. Walchand setting Premier Automobiles, Birla, Hindustan Motor, Tata and Ashok Leyland producing trucks; M&M assembled jeeps from imported components. The manufacturing of Two and Three wheelers was equally of the same position.

The indigenous two wheeler segments entered in Indian Market with the introduction of "Lambrelta" scooter by M/s Automobile Products of India Limited, Bombay in 1955. The firm obtained the two-wheeler technology from Innocent company of Italy in 1960, M/s Bajaj Auto entered in this segment and remained the most successful and the largest manufacturer of two wheelers in India. The firm obtained technology from M/s Piaggio of Italy. Enfield India Limited introduced Motor Cycle on Indian road. This firm obtained technological know-how from Enfield of U.K. Escorts Limited obtained technical know-how from Poland. For over 40 years in the past, Indian scooters are manufactured with the same Indian model. In the mid of

1980's, the motorcycles introduced on Indian roads were manufactured using the Japanese technology. The Kawasaki, Honda, Suzuki and Yamaha and now Samurai have extended financial and technological collaboration to Indian two wheeler firms in a big way. The motorcycle market is now dominated by technology based vehicles. The Indian automobile firms in two and four wheeler segments introduced several changes in the original products designed to suit Indian road conditions.

The post independence era witnessed considerable growth in the automobile sector. The Indian automobile firms grew only after independence. Large number of firms started production of automobiles in India particularly after 1975. Prior to that only 18 firms were in this field. In 1971-80 decade, as many as 26 firms entered afresh. This indicates that such a large number of firms entering in Indian automobile industry were possible only due to the Government support. The major reasons for higher number of firms entering in two wheeler sectors are:

- 1) That the two wheeler have become a need of a common man and;
- 2) The relative investment to start two wheeler firm is much less as compare to the other types of automobiles.

The year 1984 was the year of revolution in the Indian automobile industry. After 40 years of domination by the Birla groups, Hindustan Motors and Premier Auto Limited, the Indo-Japanese joint venture started the production of Maruti-Suzuki car. A host of other collaborations between India and Japanese companies to produce cars, LCVs, Scooters and Motor Cycle were signed up in 1983 – 84. The age of the Ambassador by Hindustan Motors, the one and only model is now over with the end of the Birla monopoly. While the first Maruti-Suzuki cars were coming off the assembly line in 1984, Hindustan Motors tied up with Catertillav to manufacture a full range of earth-moving equipments. Despite certain initial engine design problem, the Contessa based on a 1978 Vauxhall vx 6 model car, has been fairly well received .

Following India's growing openness, the arrival of new and existing models, easy availability of finance at relatively low rate of interest and price discounts offered by the dealers and manufacturers, all have stirred the demand for vehicles and a sound growth of the Indian automobile industry.

The data obtained from ministry of commerce and industry shows high growth obtained since 2001- 02 in automobile production continuing in the first three quarters of the 2004-05. Annual growth was 16.0 per cent in April-December, 2004; the growth rate in 2003-04 was 15.1 per cent. The automobile industry grew at a compound annual growth rate (CAGR) of 22 per cent between 1992 and 1997. With investment exceeding Rs. 50,000 crore, the turnover of the automobile industry exceeded Rs. 59,518 crore in 2002-03. Including turnover of the auto-component sector, the automotive industry's turnover, which was above Rs. 84,000 crore in 2002-03, is estimated to have exceeded Rs.1,00,000 crore (USD 22. 74 billion) in 2003-04.

1.7 MAJOR MANUFACTURERS OF AUTOMOBILES IN INDIA

01. Maruti Udyog Ltd.
02. General Motors India
03. Ford India Ltd.
04. Eicher Motors
05. Bajaj Auto
06. Daewoo Motors India
07. Hero Motors
08. Hindustan Motors
09. Hyundai Motor India Ltd.
10. Royal Enfield Motors
11. Telco
12. TVS Motors

✓ 13. Mahindra & Mahindra

14. Swaraj Mazda Ltd

✓ Government has liberalized the norms for foreign investment and import of technology and that appears to have benefited the automobile sector. The production of total vehicles increased from 4.2 million in 1998- 99 to 7.3 million in 2003-04. It is likely that the production of such vehicles will exceed 10 million in the next couple of years.

✓ The industry has adopted the global standards and this was manifest in the increasing exports of the sector. After a temporary slump during 1998- 99 and 1999-00, such exports registered robust growth rates of well over 50 per cent in 2002-03 and 2003-04 each to exceed two and- a-half times the export figure for 2001-02.

2/20/04 ✓

1.8 SIGNIFICANCE OF AUTOMOBILE INDUSTRY IN INDIA

✓ On the canvas of the Indian Economy, automobile Industry occupies a prominent place. Due to its deep forward and backward linkages with several key segments of the economy, automobile industry has a strong multiplier effect and is capable of being the driver of the economic growth. A sound transportation system plays a pivotal role in the country's rapid economic and industrial development. The well-developed Indian automobile industry ably fulfils this catalytic role by producing a wide variety of vehicles: Passenger cars, light, medium and heavy commercial vehicles, multi-utility vehicles such as jeeps, scooters, motorcycles, mopeds, three wheelers, tractors etc.

✓ The automobile sector is one of the core industries of the Indian economy, whose prospect is reflective of the economic resilience of the country. With 4% contribution to the GDP and nearly 5% of the total industrial output, the automobile sector has become a significant contributor to the exchequer. Continuous economic liberalization over the years by the

/government of India has resulted in making India as one of the prime business hub for many global automobile players. The automobile industry witnessed a growth of 19.35 percent in April July 2006 when compared to April July 2005.

The Indian automobile industry has a mix of large domestic private players such as Tata, Mahindra, Ashok Leyland, Bajaj, Hero Honda and major international players including GM, Ford, Daimler Chrysler, Toyota, Suzuki, Honda, Hyundai and Volvo.

India holds huge potential in the automobile sector including the automobile component sector owing to its technological cost and manpower advantage. Further, India has a well-developed, globally competitive Auto Ancillary Industry and established automobile testing and R&D centres. The country enjoys natural advantages and is among the lowest cost producers of steel in the world. The Indian automobile industry today boasts of being the second largest two-wheeler manufacturers in the world. India is the largest Motorcycle manufacturer. Second largest tractor manufacturer, fifth largest commercial vehicle manufacturer in the world and fourth largest car market in Asia.

1.9 SCOPE OF THE STUDY

The word 'automobile' comprises not only one set of vehicles namely cars, jeeps, trucks, buses and station wagons but also another set consisting of tractors, motorcycles, scooters, mopeds and three-wheelers.

The present study covers the automobile firms, which were in operation up to the period of 1991-92 to 2005-06. Though the first three firms were established just before India's independence, the analysis of the data is due from the year 1991 onwards. The study covers the firms, which are or were producing automobiles in the segment of two and four-wheelers in India. The selected firms are either solely producing automobiles or are having some

other products in addition to automobile products produced by Defence Ministry for their captive use are excluded from the study. The firms that were having negligible presence in four or two wheeler segment have been ignored

The present study is devoted mainly to the manufactures of passenger cars, commercial vehicles, jeeps, trucks and buses and two wheelers who also produce spare parts and components for original use and replacement. The study does not include a commercial vehicle manufacturing unit established under the Ministry of Defence, the Govt. of India, owing to the non-availability of published data. The study also does not cover the ancillary sector of the automobile industry for the reason that the manufacture of ancillary component etc. is also undertaken by the main automobile manufactures. The study is focused on the size and growth of the firms in respect to sales, profit, production, net assets and employment. However size and growth are closely linked for this reason the study is mainly directed towards an analysis of investment and growth of these firms with a view to gain insight into the effect of these factors on the growth and development of the industry.

This is necessary to study the various ways affecting the growth of a firm. The present study is intended to focus on sales, products, profits and investment of a firm in automobile industry of India. Thus the growth of a firm in automobile industry of India is studied with reference to its size, production, sales capacity utilization and net assets and profits.

In order to study the above aspects, it is necessary to review the growth of firms in the industry, the environment in which the firms were and are operating, the sales and profits of major competing firms in the industry etc. The size of a firm needs to be understood in the context of growth. A firm may be a leader in market share in the industry for a short time due to certain competitive advantages enjoyed by it. However, it is necessary to study the internal health of such a firm for drawing meaningful conclusions as to

whether the growth achieved in the past will be sustained in the future. The growth in sales, total assets, profits and market share are indicators of growing firms. It is, therefore, necessary to look into these aspects of growth by analyzing the capacity utilisation, profits, and investment of the major four and two-wheeler automobile firms in general and a leader firm in particular using case study approach.

After the above aspects of various firms are studied, it is proposed to study as to why certain firms could not grow and certain others achieved spectacular growth. The study of strategies of both the types of firms may lead one to conclude that a firm having sustainable growth will be guiding factor to others in future.

1.10 OBJECTIVE OF THE STUDY

In a globally competitive environment, the objective of any firm is to keep its market leadership by adopting its strategies in such a way that it gets competitive advantage. The sustainable competitive advantage is achieved through cost leadership and product differentiation.

In the past, various studies were made on investment pattern of automobile industries and several aspects are covered by different researchers. However no attempt was made in the past to study a firm at micro level with a case study approach to evaluate the link between growth and size of firms in terms of sales, net assets, profits, capacity utilisation etc. The objective of the present study is to analyse the growth pattern of various automobile firms in four wheeler and two- wheeler segments in India and evaluate the measures they adopted for growth. A detailed evaluation of strategies adopted by a leader firm is proposed to be done at micro level. The measures used by the fast growing firms could be a guiding force for those nearly entering the industry. A very important factor for achieving growth in an automobile firm is also the use of unutilized capacity and management skill.

Keeping the basic approach in mind, the following objectives and broad areas are selected for the study.

- ~~1.~~ To study the historical background and the growth of the automobile industry in India.
- ~~2.~~ To examine the role of new economic policy with respect to the automobile industry in India
- ~~3.~~ To study the growth in terms of production of India Automobile firms and establish growth trends based on production/sales data for past 10-15 years.
- ~~4.~~ To analyze the relationship between size and growth of firms in terms of sales, assets and profits for past 10-15 years and establish growth trends for each firm in respect of (a) Growth in sales, (b) Growth in Assets (c) Growth in net worth, (d) market share and (e) Advertisement and capacity utilization.
5. To select a leader firm having sustained growth for detailed case study and examine its financial and managerial strategies, which are responsible for its sustainable growth.
6. To study a theoretical relationship between the size and growth of the firm on the basis of the above stated approach to evaluate how a firm really achieves them in the automobile industry of India.
- ~~7.~~ To find out the impact of recession on the automobile industry in India.
- ~~8.~~ To enquire into the relationship between the new models introduced by the automobile firms and the growth of the automobile industry in India.

1.11 HYPOTHESES TO BE TESTED

- ~~a.~~ The leader firm achieved growth in terms of sales, profit and assets by proper and efficient use of working capital

- b. Quality of the product was incidental for sustained growth.
- c. Low cost and price of the product helped achieving faster growth.
- d. Capacity utilisation led to lowering the production costs.
- e. Updating of existing products or introduction of new products in maintaining leadership
- f. Efficient service after sales contributed to higher sales and thereby the growth.
- g. Loans at reasonably lower rate of interest provided by hire-purchase agency has also contributed for the growth of firms.
- h. Technical or financial collaboration was helpful to grow faster.
- i. Liberalisation policy followed by the Govt. of India since 1980 has helped the firms in achieving its higher growth.

1.12 METHODOLOGY

In the present study, it is proposed to analyse the growth strategies used by the leading firms in four and two wheeler segments of automobile industry in India using case a study approach which enables to examine the growth of the firms at micro level analysing the strategies adopted by a particular firm. The case study approach is proposed for detailed analyses and evaluation of growth strategies with hypothesis proposed to be tested and confirmed or rejected to be tested as to whether the leader firms sustained growth with the formulation and implementation of the growth of firms.

The growth of India automobile firms with reference to production, sales, net assets, profit, market share as a result of brand name, quality, capacity utilization, economies of scale, market share, product differentiation, competitive price etc. is worth studying. The growth achieved as a result of

capacity utilisation made from time to time by individual firm is an interesting subject matter.

The history of Indian automobile firms clearly indicates that as many as 40% firms could not continue due to some reason or the other. The balance 60% firms continuing are not equally progressing as they are facing stiff competition. The history also indicates that the most of the firms, which stopped production, were in two wheeler segment of automobile industry. There are a very few firms, which are having a sustainable growth. It is therefore necessary to study the market share, net sales and profits and relevant data of all these firms to draw conclusions on the growth strategies which they adopted.

For the study of chapter VII, the statistical method using regression analysis has been taken to analyse the size and growth of automobile firms in terms of sales, profit, net assets, market share and investments, etc.

1.13 REVIEW OF LITERATURE

A survey of the existing literature indicates that there is no comprehensive and intensive study focusing upon various aspects of automobile industry in India. In regards to other Indian industries, a more advanced, highly scientific and comprehensive studies have been undertaken by researchers and different institutions. Unfortunately unlike other industries, the automobile industry has not been able to draw the attention of researchers to any noticeable extent. There exists, of course, a good deal of analytical study on some of the aspects like finance, production, sales and automobile designs, etc of the industry. The study on size and growth of firms in Indian automobile industry in terms of production, sales, market share is very useful. But the information related to size and growth of the industry is inadequate.

The studies that are available on the automobile industry are either in the nature of government reports or annual reports of the auto firms or those emanating from the producers themselves like Association of Indian

Automobile manufacturers (AIAM). These studies are confined to a limited set of issues relating mainly to taxation, prices, models and production. But none of the studies focuses upon the basic analytical problems like technology, product differentiation, diversification, competition, costs, profits and market structure.

Above all, it may be mentioned here that not a single study so far has been undertaken on the degree of concentration and relationship between size and growth of automobile firms in India. It is, infact, necessary to analyse the competitive elements existing in automobile firms. It is worthwhile to examine the level and trend of concentration and potential competition in the industry. The most important aspect which has been absolutely ignored by the researchers is the capacity under-utilization of migre resources may push up the cost of production of such firms. All these aspects have to be discussed in the light of the government policies, prices and cost structure.

The first study conducted by the Department of Economics and Market Research, Hindustan Motors Limited in 1966, was confined to the automobile manufacturing industry only. It relates to issue such as government policies regarding taxation and foreign exchange, size of the market and the small car project. However, the analysis is unable bring forth policy suggestions regarding any of the major issues.

The National Council for Applied Economics Research (NCAER) has made a study to the estimation of demand for passenger cars in India for the year 1971 and 1980. It analyses that the demand for cars depends significantly on income and prices.

The present study makes a serious attempt to present a complete up-to-date picture while highlighting important aspects like production, sales, net assets, profits and market structure of firms in the automobile industry of India.

The active firms taken for analyses are listed below.

01. Maruti Udyog Limited
- ~~02.~~ Telco
03. Ashok Leyland
- ~~04.~~ Mahindra & Mahindra
- ~~05.~~ Bajaj Auto Limited
06. L.M.L. Limited
07. Hero Honda Motors Limited
08. TVS-Suzuki Limited
10. Kinetic Engineering Limited

Mahindra and Mahindra Limited was a private limited company till 15th June 1955 when it was converted into a public limited company. Telco was registered as a public limited company in 1948 for the manufacture of locomotives, boilers and other engineering tools. The automobile division of the company started functioning in October 1954. Bajaj Tempo limited is a sister concern of Bajaj Auto Limited. It was incorporated in September 1958 and started manufacturing operation in the same year. The period 1991-2006 has been chosen to study the growth the automobile industry in India.

The manufacturer of these automobiles requires several inputs like iron, steel, oil paint, varnish, rubber, plastic, non-ferrous metals, castings and forgings. Consequently, the automobile industry has a manifold accelerating effect on activities in many sectors of the economy. It is also significant from the point of view of employment generation, revenue to the government, taxes and custom duties and national defence.

Thus the basic strategy adopted by the manufacturers in improving fuel efficiency is down sizing, material substitutes, front wheel drive, use of diesel engines with turbo chargers on turbine engines, and small vehicles with lesser power and better acro dynamics. Computer technology has been introduced with vehicles on the newest application of computers with cars pertaining to emission control and fuel economy. Electronics have also made inroads in the breaking system. Car radars have been used to avoid accidents.

On account of the various changes brought about as mentioned above, the demand for cars / scooters / motorcycles have picked up significantly. The size of the market for cars has increased. This attributes to increase in per capita income of India which helped the number of effective buyers of car. A few automobile firms in the segment of car, scooter, commercial vehicle and motorcycle have advantage of economies scale and therefore they have high growth as compared to the other which has not achieved economies scale.

1.14 SOURCES OF DATA AND SAMPLE PERIOD

The study is based on date for the period from 1991-92 to 2005-06. Hindustan Motor Company was the first to take up the production of vital parts of motor vehicles like engine, gears and rear and front axles. The first partially manufactured car in India was produced in 1949. But in real sense, the manufacturing of automobile started only after 1953 when, on the recommendation of the first Tariff Commission on Automobile industry, only five manufacturers having a programme of complete manufacture of motor vehicles were permitted to continue their operations. The rest were asked to close down their businesses within a period of three years.

The data of vehicle production of all automobile firms under study is obtained from the published figures by the Association of Indian Automobile Manufacturers (AIAM), The Automobile Components Manufactures Association (ACMA), Society of Indian Automobile Manufacturers Association (SIAMA) and The Federation of Automobile Dealers Association

(FADA) etc. The relevant data of automobile firms for the past 15 years is taken from the available annual financial statements of the firms. The information on active firms were obtained from newspapers, auto magazines and persons concerned with the firms. The Annual reports of SIAM, have also been used for data regarding the number of vehicles produced and sold by the manufacturers. Various issues of Motor India and Business magazines provide information regarding the technology, production and export of automobiles. The reports of CMIE have also been used for relevant source of data for this work.

All types of automobiles produced by the firm are taken together for comparing with other firms in the industry. The growth and size are measured in terms of sales, net profit, net asset and capacity utilization of two and four-wheeler firms.

The strategies of the high growth firms are studied from the available published sources as well as the information gathered from persons connected with the high growth firm. The strategies studied are related to technology, costs, prices, after sales services, quality of product, manufacturing system, sales, net assets, and product differentiation etc. The analysis shows that Maruti Udyog Ltd, Telco and M&M with the segment of four wheelers and Bajaj Auto Ltd. in two wheeler segment are the leading firms. The active firms that made contributions in the process of growth have been taken for analysis.

1.15 AN EVALUATION OF THE AVAILABLE DATA IS AS UNDER

- i) Commercial vehicles are also produced in the car sector (for instance in case of Tata Motors), but profit and loss accounts and balance sheets are not available separately for cars and commercial vehicles division. Consequently their behaviour could not be analyzed with reference to the different types of vehicles produced.

- ii) Firm -wise data are not available with respect to the power shortage and raw materials. Consequently, their contribution to the under utilization of capacity could not be assured.

1.16 LIMITATION OF THE STUDY

Though automobile industry plays a significant role in the Indian economy in terms of the employment opportunities, and government revenue, it has led to the problems of accidents and pollution in the country. Till the year 1988, legislation regarding safety standards and pollution controls was either non-existent or not enforced. The Motor Vehicle Act of 1988 has set the emission limit for four and two-wheelers. Smokes emitting from the vehicle are badly affecting the environment. Noise pollution has not been dealt with except for rules against the use of air horns. There are also no tougher laws against overloading as it causes accidents, air pollution and excessive wear of the roads.

1.17 CHAPTER SCHEME

The study comprises eight chapters. The Introductory Chapter includes the historical development of Indian automobile firms during pre-and post independent India., significance of the study, objective, hypothesis, methodology, review of literature, sources of data and limitation of the study.

The Second Chapter refers to automobile policy and growth of automobile industry.

The Third Chapter is devoted to study the structure and growth of automobile industry. It also includes the discussion on the models introduced by the automobile firms.

In the Fourth Chapter, efforts have been made to discuss the role of technology on the growth of the automobile firms.

The Fifth Chapter analyses the market structure and the growth of firms in terms of production and sales and the price structure of the two-and four-wheelers except commercial vehicles. It is also intended to analyze the diversification as a key factor for the growth of automobile firms.

The Sixth Chapter focuses on the barriers to entry as a growth strategy adopted by the established firms.

Chapter seven is devoted to the theoretical aspects of the size and growth of firms. Further, it is intended to discuss the size and growth of automobile firms in India in terms of sales, market share, net fixed assets, investment, capacity utilization etc.

The Last Chapter helps in drawing useful conclusions and major guidelines in order to further enhance the condition of the industry.

Chapter - II

Automobile Policy and Growth of Automobile Industry

Chapter - II

AUTOMOBILE POLICY AND GROWTH OF AUTOMOBILE INDUSTRY

This Chapter presents a detailed analysis of the new industrial policy and its effect on the growth of automobile industry in India. Attempts have been made to discuss the automobile policy followed by the Government of India and how it has reflected on the growth of automobile industry. It has been observed that automobile industry remained almost stagnant until the adoption of new industrial policy in early 1980's and 1990's. Strict licensing control and restricted capacity utilization did not witness the growth of automobile firms in India. It is very important to know how the liberalization Policy of the government has influenced growth of automobile industry.

In this Chapter, efforts have been made to study as to which segment of the automobile industry has got more entry of global players and to focus on the segments that have reflected growth. It will be followed by the analysis of growth of various automobile firms in particular and automobile industry in general. A report of automobile policy of the Government of India for the year 2002 will also be discussed here.

2.1 INTRODUCTION

The industrial growth of any country, to a greater extent, depends on the industrial policy of a Government. In India, the policy for industrialization was formulated after independence. The effect of various policy measures of the Government on Indian automobile industry needs review for understanding the growth of Automobile firms in India.

Handwritten: Immediately after independence, the Government had restricted the capacities of all automobile firms. On the one hand, the supplies were

controlled and on the other, the prices of vehicles were also controlled. Barring certain inputs, the prices of inputs, however, were not controlled. The assistance of technology was restricted. Foreign exchange was not available to the extent required by the automobile firms for importing components. Indigenization was slow due to the lack of basic infrastructure facilities. As a result, automobile industry remained stagnant. The customers had no choice and it needed a long periods for getting the vehicles. Firms were neither allowed to increase capacity utilization nor to introduce new models.

2.2 RESTRICTED GOVERNMENT POLICY

The automotive industry in India has had to manoeuvre its way through an obstacle ridden past. Its growth stems from the persevering vision of the auto-manufactures and the Government's gradual response to their desires to make the market more competitive. However, the factors that led to its growth are wide and varied. Here is a brief chronicle of the evolution of the Indian automobile policy. The Pre-liberalization phase, from 1947 to 1983, was characterized by stringent state control and regulation of the industry. Indian automobile firms witnessed very poor growth and remained neglected at the hands of Indian policy works. As a result, the passenger car industry was left behind with a large technological gap that kept widening for a long period of 35 years after independence.

In the years following the Independence, the Government of India, having realized the economic and strategic importance of the automobile industry, decided to direct the flow of investment into this sector. This also meant that a set of complex rules, regulation and an elaborate network of policies were brought into control the industry.

Back in 1945, the Government's Statement of Industrial Policy had been centralized to harness the potential of the automobile industry. The value of the industry was seen as something that needed to be controlled and nurtured so that the country would benefit from its growth. The Industrial

Policy Resolution of 1948 – the pivotal legislation in this respect – was passed to enable central regulation and control.

2.3 INDUSTRIES DEVELOPMENT AND REGULATION ACT

On the national front, the Industries Development and Regulation Act was passed in 1951. An industrial license was required for a unit with more than 50 workers or, for 100 or more workers without power. This measure ensured that it would not be possible to establish a new unit, expand output by more than 5 per cent, change the location, manufacture a new product, or conduct business if a policy change were to occur. Even in the year 1956, the Industrial Policy Resolution did not classify automobiles under either its Schedule A or Schedule B. The implication here was that growth would only be left to the initiative and enterprise of the private sector.

This undefined state of affairs (1945 to 1956) led to the dilution of the Government's efforts to intervene and invest in the automobile industry. To get a firm grip, the Foreign Exchange Regulation Act (FERA) was passed in 1973 that brought down the maximum amount of foreign equity to just 40 per cent. The system was growing but its functioning was not properly defined. In the mid seventies, a maximum growth rate of up to 25 per cent in five years was permitted to Commercial Vehicle (CV), automobile ancillary and tractor manufactures.

After 1970, the above scenario gradually changed as the Government gave some concessions to the industry. Government itself became a competing force to many firms in two wheeler segment. Firms were allowed to make any type of product within the category of license under broad banding but the quality was restricted to the licensed capacity.

The year 1975 eventually saw the regularization of excess capacity for CVs, and two and three-wheelers as well.

In the eighties, MRTP / FERA firms were allowed to apply for capacity expansion if the additional output was exported in accordance with the directions of the Government. The list of centralized industries was expanded to include cars, jeeps, three-wheelers and two-wheelers. In 1984, all types of automobiles were brought under Schedule IV. This meant that the industries would be specially regulated on the ground of raw material shortage, possible high pollution and infrastructure constraints. This implied that none of the automobile firms would benefit from the expansion schemes applied to the other vehicle categories. From consumer's point of view, a new era has started since the end of the year 1988. The long waiting periods to purchase vehicles of the customers' choice came to an end and now the search for the product best suited to their needs came into existence.

2.4 POLICIES BECOMING LESS STRINGENT

The Government policies gradually became less stringent. New firms were allowed to enter all the segments and existing firms brought out new models. Manufacturers sought to use broad-banding to work flexibility into the utilization of productive capacity to make similar products. Earlier, there was a provision to diversify, where extra capacity was used to manufacture other items within the scheduled industry. This meant that a firm could produce any product-mix within its overall capacity. For example, a four-wheeler manufacturer could make cars, jeeps, LCVs, MCV and HCVs. Later, in 1986, this diversification was also permitted for two-wheelers and three-wheelers with an engine capacity up to 350 cc. Eventually, it was also extended to automobile ancillary units. Among the ancillaries there was flexibility within broad categories such as auto electrical, suspension components, transmission components, fuel-injection equipment, engine components, cooling system and clutch & brake systems.

In 1986, the government announced that firms across the spectrum of the industry should have a minimum economic scale to ensure profitability.

The scales were:

- 50,000 for cars,
- 30,000 for cars below 2000 cc,
- 200,000 for two-wheelers,
- 500,000 for an export-oriented-unit,
- 25,000 for commercial vehicles,

2.5 SAFETY, STANDARDS AND PRICING

Till the year 1988, the legislation regarding safety standards and pollution control was either non-existent or not enforced. The Motor Vehicles Act of 1988 set the idling emission limit for four-wheelers and for two and three wheelers as 4.5 percent. Smoke density limits were set for diesel vehicles. At the same time, vehicles that are fuel-efficient attract less excise duty and can avail of concessional customs duty.

Under the Motor Vehicles Act, every component used has to comply with standards laid down by the Bureau of Indian Standards (BIS). The Act outlines rules regarding brakes, wipers, steering, safety glass and lights. Noise pollution hasn't been dealt with except for rules against the use of air horns. There are also tougher laws against overloading as it causes accidents, air pollution and excessive wear of the roads.

Other policies are linked to the eventual pricing of a vehicle. In the sixties, manufacturers had to get any price increase approved by the government. In 1967, price discipline freed jeeps and CVs from this practice. However, cars were subject to statutory price control. The auto manufacturers finally succeeded in getting the decontrol of car prices in the year 1975.

2.6 FREEDOM TO FOREIGN COLLABORATION

The decision in the late eighties to allow foreign collaborations in all automotive segments was a milestone in the destiny of the Indian auto world. Capacity constraints became history and the auto industry was allowed greater flexibility in their operations right from exemption from MRTP notification procedures to the freedom in importing technology and capital goods. Importantly, the component sector was de-licensed except for MRTP and FERA companies.

In 1991, the New Industrial Policy (NIP) swept away most of the hurdles relating to expansion and foreign investment. Industrial licensing was abolished for all but 15 industries were under Government control. The car industry was delicensed in May, 1993. Foreign investment was automatically allowed in 34 industries provided the foreign equity covered the cost of imported capital goods. Phased manufacturing and a time-bound indigenization programme were scrapped. The Rupee was also made fully convertible to comply with Article VII of the International Monetary Fund (IMF). Customs tariff dropped from 150 percent in 1991 to 50 percent in 1995. Due to initial period of recession, Gulf War and the startup time for the industry to adopt new policy, the growth in automobile production was seen only after 1993. Importantly, the excise duty on non-petrol vehicles was reduced from 23 percent to 15 percent. It was later amended to include all CVs (petrol and diesel) with a gross weight exceeding 2700 kg.

The decontrol, delicensing and deregulation of the auto industry have changed the growth of the Indian auto world. Today, major auto manufacturers such as Volvo, Daimler Benz, General Motors, Mitsubishi, Suzuki, Peugeot and others are fighting the battle for supremacy in different categories of vehicles. The latent potential of the industry is now being tapped and the future spells performance as competitive technology drives an open market into top gear.

2.7 AN OUTLINE OF AUTOMOBILE POLICY

Given as below, an outline of the automobile policy of the Government of India spans over seven areas, covering everything from licensing to import policies.

1. Industrial Licensing

In July 1991, industrial licensing was abolished for all types of automobiles except motor cars. Licensing for motor cars was abolished in April 1993.

Expansion of exciting newer projects of creation does not need licensing if the project is located 25 kms outside the periphery of a city with a population exceeding about 1 million. However, this condition may be relaxed in the case of a designated industrial area.

Projects that import capital goods get automatic approval if:

- ◆ The availability of foreign exchange is ensured through foreign equity.-
- ◆ CIF value of imported capital goods is less than 25 percent of the total value of the plant and equipment subject to a maximum of Rs 2 crores.

2. Foreign Investment

Subject to the above stated conditions, foreign equity stakes up to 51 percent will have automatic approval. In the case of motor cars, automatic approval is subject to a condition of dividend balancing (outflow on current account of dividend payment to be balanced by foreign exchange earnings).

3. Foreign Technology Agreements

Foreign technology agreements get permission with ease to a lump sum payment of Rs 1 crore, 5 percent royalty (net of taxes) on domestic sales and 8 percent for exports. However, this is subject to the maximum payment of 8 percent of sales over a 10-year period from the date of agreement or 7 years from the commencement of production.

4. Cases Other than the Above

Proposals that do not fall in the above categories need clearance from the Department of Industrial Development, Ministry of Industry.

5. Engaging foreign Technicians

Permission is not required for hiring foreign technicians for testing of indigenously developed technologies. Payment may be made from blanket permits or free foreign exchange in accordance with RBI guidelines.

6. Exim Policy

Import of motor vehicles fell in the restricted category. Vehicles can be imported against a specific license or in accordance with a public notice issued by the DGFT.

Capital goods, raw materials, components, parts, intermediates and consumables for the manufacture of vehicles can be freely imported unless they appear in the negative list of imports.

Considering the brief account of industrial policy as stated above, it is necessary to review the policy and then its effect on the automobile firms in India. The following reviews give the brief account of the controls and concessions

2.8 REVIEW OF CONTROLS ON AUTOMOBILE FIRMS

The Government, from time to time, enacted various legislations to control the industries in this country. Certain controls were based on investment of the firm. The automobile firms need substantial amount of capital investment. Most of these firms were in private sector. Raising finance through share capital or obtaining loans were restricted by the Government during the control regime.

2.8.1 Industrial Policy (1983)

Till 1983, India's passenger car choice was basically between Ambassador (HM) and Premier Padmini (PAL). APL and these two automobile firms were set up in 1940. The entry of Maruti 800 (Popularly known as people's car) in December 1983 has changed the outlook. The entry of Maruti 800 in December 1983 has changed the scenario of passenger car segment at least in terms of choice and price. During 1983-1991, Maruti Udyog Ltd. maintained its monopoly but the year after 1991 onward brought the end of its monopoly. It was realized that reform in economic policy is a must for the growth of automobile firms of India.

It was believed that the industrial growth was hampered by unnecessary procedural delays in clearing Projects. In a series of important policy measures during 1984-85, the process of reform initiated earlier was given a great impetus. The aim of these policies was to modernize to upgrade that technology, replace monopoly markets by competitive ones and thereby to generate a higher overall growth rate and employment in industrial sectors.

A number of measures had been taken in the early part of 1980's towards liberalization of industrial policy and streamlining of licensing procedures. A comprehensive industrial policy statement was made by the government in July, 1989 which outlines the significance of policy, limitation of broad banding and classification under brand categories of 2-wheeler, 4-Wheelers and Tractors. Thus, to take one example, Cars, Jeeps, Light Medium and Heavy Commercial Vehicles, etc have been clubbed together into one generic category of "Four Vehicles". These measures helped the manufacturers to change their product -mix rapidly to much change demand pattern without making procedural delay. The manufacturers must be in a position to improve utilization of installed capacities by diversification of their product range.

Following the liberalization in 1993 and subsequent considerable growth of the economy, the passenger car firms experienced the growth rates from 20 to 40 percent for consecutive three years i.e.; from 1993 to 1996. MUL, the dominant player in the passenger car segment having over 80 percent market share in 1980 is now facing tough competition with the entry of foreign automobile firms such as Daewoo, Honda, Hyundai, Mercedes' Benz, General Motors, Mitsubishi and Peugeot.

2.8.2 Economic Policy of 1993

The Government of India's new automobile policy announced in June 1993 attracted a large number of automobile companies to India. These include General Motors and Ford, besides Three Japanese, Six European and Two Korean companies. Chrysler Company is also seeking to enter the country with a suitable Indian partner. In addition, there are three existing Indian companies, Hindustan Motors, Premier Automobiles and Telco and one Indo-Japanese venture Maruti is already in the passenger car market.

The Indian Automobile industry has undergone transitional phase and has also affected all the segments of automobile industry. The transition has been necessarily by the entrance of International companies

2.8.3 Automobile Policy (1998) and its Implications

September 1998 witnessed the end of a three year depression and reversal of the negative growth trend in Indian automobile industry. Ever since then, demand for all categories of vehicles in different segments has been steadily going up, with the passage of time. Vehicle manufactures, both Indian and foreign, have risen to the occasion and has been adopting latest techniques to grab a greater share of the growing market.

The success of a revised auto policy depends on the extent of demand stimulation through fiscal incentives both to the vehicle and component sectors. Product price reduction resulting from tax-cut not only boosts sales

but yields higher revenue to the Government. Also an effective mechanism needs to be evolved to check manufacturer and sale of counterfeits.

In the emerging scenario, marked by the entry of too many players in the field, automobile policy revision has to be taken up on an urgent basis to address several interactable issues. The most controversial among them is the MoU policy. Though this approach is reportedly incompatible with the WTO guidelines, it has supported the indigenous component industry to a certain extent. The Government will have the indigenization policy well before the WTO deadline year 2003. Political compulsions apart, India will have to follow the example set by NAFTA and ASEAN countries whose policies have been redefined so as to be WTO compatible. This has ensured an adequate level of protection while guaranteeing much larger market access for their automotive industries. For India, a similar region-wise understanding with SAARC countries could very well be worked out.

From 1991 onwards, the licensing on automobile firms was totally removed except for cars which were removed in 1993. The growth of automobile production was achieved at a faster rate from 1993 onwards. The scenario in Indian automobile industry has not much changed after 1991. There were no new entrants in the two wheeler sector. Some Indian and foreign firms planned to start car production in India. In other segments, competition and demand for vehicles increased which gave advantage to the established firms.

2.8.4 Attraction for MNCs

It was only in 1991 that liberation of economic policies started in real terms. India opened its gates to foreign investors who were seriously looking at lower markets to prop up the sagging global passenger car market. Immediately after the introduction of liberalization, the world's leading automobile giants were busy setting up their shops in India. This reminds us that India has suddenly become the focal point for the global automobile

manufacturers. With a saturation in the developed countries, it was only countries such as China and India which offered scope for appreciable market growth. India with its strong democracy and a growing economy naturally stands for better choice.

Most of these automobile MNCs entered into joint ventures with existing Indian automobile manufacturers and many of them simply used the existing facilities to assemble their cars. However, most of the multinationals which set up their shops here went wrong on a few counts. They grossly overestimated the size and growth of the Indian car market. They also went wrong in the selection of products for the market.

To keep their investments low, most of brought their outdated technology on the assumption that India was not ready to absorb the latest technologies and so they went wrong in this as most of them planned huge capacities and also-brought their time tested models for sales. Also selection of the model and market demand was not based on sound market studies with the single exception of Hyundai Motor India..

2.8.5 Market Strategy

Most of the manufacturers brought cars having engine capacity of 1300 cc or above for an ordinary Indian car buyer, these were quite costly. Recession in the country combined with the uncertain political conditions kept the market demand very low during the later part of 1990's.

For the average Indian car buyer, the entry of MNCs is definitely a big boon. The customer is getting the best technology at a par with other developed countries. The service that a customer gets now has also undergone a qualitative change. Due to quality products, customer's frequent visits to the service station have come down. In pricing also the Indian customer stands to gain.

All the car makers are forced to keep a watch on price as the competition among the manufacturers is very stiff. This trend is bound to continue and in their efforts to survive, manufacturers will keep the prices under control. Innovation and value management of the product will assume greater significance.

In today's market, the customer also has a wide choice of products. The advances made in the field of information technology, print and electronics have led India to increase awareness among its customers about international quality standards and practices. Eventually, Indian buyers have also become more knowledgeable.

2.8.6 Accent on Quality / Quality Awareness

Today the customers do not only choose the best product for his requirements but also demands value for his money. The car showrooms also have undergone change; they have become the single point of contact for the customer before and after the purchase of the car.

A total change has taken place in the passenger car industry after the entry of MNCs. There is no doubt that the entry of Maruti has brought new concepts to the industry. People could relate to the quality and reliability in real terms. However Maruti could grow due to the closed economy syndrome and where there was little or no competition to watch its products. This has been the main reason for Maruti continuing with the same models for over a decade. But the entry of multinationals has changed this situation.

The healthy competition brought in by the entry of MNCs has led to a passenger car market with high customer expectations. This, in turn, has forced all the car manufacturers to look at ways and means of adding value to their products and services. Quality standards have really gone up and one could notice perceptible changes in after sales service. Competition has brought the best and the cheap models for the customers. The future looks

bright for the Indian car buyers as well as the manufacturers who are willing to go that extra mile to satisfy the customers.

2.8.7 Other Restrictions and Concessions

It is very important to analyze that the certain concessions provided by the Government has played a significant role in the growth of automobile industry. Government of India has ensured that the industrial growth of the country should be very high. In view of this it gave various concessions to industries.

In automobile sector, the Government gave concessions of lower customs duty on imported components to fuel efficient vehicles. The import duty was lowered on certain types of raw materials which were not available locally. After liberalization, the Government lowered the rates of customs duty from earlier 150% to 85% and further to 65%. Presently the majority of items enjoy concessional-customs duty rates of 50%, 25% or even less.

The excise duties on automobiles were very high. For example two wheelers above 75cc carry 25% excise duty on ex-factory selling price whereas cars carry 40%. Other vehicles are having excise duty of 15 to 20%. The excise duties were varied by the Government to give boost to certain segments of automobiles. The two wheelers and cars are still treated as luxury goods and hence the duties are high. However, this has resulted in high costs and lower demand to vehicles in this category. Due to customer preference to scooter and motorcycles, the demand recession is not felt.

The central Motor Vehicle Act and Rules made certain items compulsory with automobiles for the safety of customers, owners and the general public. The emission norms prescribed by the Government are in public interest. This however, calls for modification in engines of existing vehicles at an extra cost. The provision of blinkers, leg guard, lights of specific

lumen, brakes of certain quality are some of the restrictions imposed by the Act.

Apart from above controls and concessions, there are various areas which either restricted the growth of automobile firms maintain sustainable growth.

2.9 PRODUCT INTRODUCTION IN COMMERCIAL VEHICLES

New product introductions were limited to buses and the top ends of trucks. While safety has become an increasing concern, the recent years have also seen the emergence of a segment of passengers willing to pay a higher price for better comfort and luxury. Low floor buses made tentative entry into metro roads while inter-city bus services are finding customers for luxury buses.

Trucks in the heavy vehicle segment the year 1998-99 saw new product introductions.. The high level of sophistication and higher power in source of these vehicles anticipate dramatic improvements in the quality of roads. The high productivity premium products will not realize their potential, until a quality road network in India is improved.

The financial year 1999-2000 began on a happier note in the commercial vehicle industry. A 24 per cent jump in the first quarter sales compared to corresponding period in 1998-99 indicates the beginning of a recovery.

The recovery of commercial vehicle is attributed by two factors. First, the base for comparison in 1998-99 when the demand plummeted 44.9 percent

from the previous year. Second, these were seasonal factors including good harvest of cash crops, which caused a sport in demand.

2.10 RECESSION EFFECT

A slowdown in the automobile industry became visible in 1996-97. Consequently, low demand and piling up of inventories forced companies to reduce production. The year 1997-98 will be remembered due to the largest and the deepest recession of demand in the Indian commercial vehicle industry. The Indian commercial vehicle industry is caught up in a vicious cycle of low freight rates and slack enforcement of norms keeping unproductive old vehicles on the road. The industry has reflected a negative growth rate during 1996-97 and 1997-98.

Table 2.1 : Trends in Production, sales and exports (April – March)

Year	Production	Sales	Exports
Total M & H Commercial vehicles			
1996-97	1,55,696	1,51,117	7,194
1997-98	95,854	94,131	5,872
1998-99	80,528	83,234	4,544
Light Commercial Vehicles			
1996-97	84,855	84,626	7,054
1997-98	65,040	63,767	8,212
1998-99	55,363	56,331	5,564
All Commercial Vehicles			
1996-97	2,40,551	2,35,743	14,248
1997-98	1,60,894	1,57,898	14,084
1998-99	1,35,891	1,39,565	10,108

Source: Society of Indian Automobile Manufacturers

Based on the above data published in Motor India, February 2000, annual growth rate of commercial vehicles has been prepared. Recession in the

economy caused by increase in petrol prices and rising interest rate has seriously affected the growth of M&H CVs and LCVs which is obvious from the below Table 2.2.

Table 2.2 : Annual Growth Rate

Year	Production	Sales	Exports
M & H Commercial vehicles			
1997-98	-38.44	-37.70	-18.37
1998-99	-15.98	-11.57	-22.61
Light Commercial Vehicles			
1997-98	-23.55	-24.64	16.16
1998-99	-14.87	-11.66	-32.24
All Commercial Vehicles			
1997-98	-33.11	-33.02	-11.51
1998-99	-15.40	-11.61	-28.23

Source: Society of Indian Automobile Manufacturers

The M&HCVs along with LCVs have witnessed negative growth rates in terms of production, sales and exports. In the year 1997-98, M&HCVs witnessed a negative growth of 38.44 percent in production, 37.70 percent in sales and 18.37 percent in exports but it has marginally declined to 15.98 %, 11.57 % respectively except exports. In the segment of LCVs, there were negative growth rate of 23.55 %, 24.64 % and 16.16 % in production, sales and exports respectively. However, the negative growth in the segment of LCVs has declined to 14.87 % and 11.66 % in production and sales respectively except exports wherein it has witnessed more negative growth as compared to the previous year. Overall the negative growth rate in regard to production of commercial vehicles has registered a decline from 33.11 percent in 1997-98 to 15.40 percent in 1998-99. It has declined from 33.02 percent in 1997-98 to 11.61 percent in 1998-99 in regard to sales. However, exports category has posted an increase in negative growth from 11.51 percent in 1997-98 to 28.23 percent in 1998-99. Recession in the country combined with

the uncertain political conditions kept the market demand very low during the later part of 1990's.

In 1997-98, several segments in the automobile industry reported negative sales and production growth due to recession. However, the effect of economic recession was not seen in the segment of motorcycle, Multi-utility vehicle and three-wheelers. The vehicles under these segments reported positive growth in terms of production and sales.

In 1997-98 (April – Jan), output of two-wheelers increased by 1.1 percent to 25.19 lakh nos, where as sales increased by 2.7 percent to 25.09 lakh nos. Negative growth was seen in sale of scooters and mopeds. However, the motorcycles segment defied the downtrend to report a growth of 15 percent. This was attributed to a change in consumer preferences. Rising incomes in rural areas and shifting customer preferences contributed to increase in demand for motorcycles.

During 1997-1998 (April-Jan), cars sales increased by 5.2 percent. However, the growth was much lower than that achieved during the period from 1993-94 to 1996-97. Despite heavy discount and interest free loan facilities, car sales failed to pick up.

The total sales of automobiles in 1992-93 were 18.88 lakh units that increased to 38.65 lakh units in 1996-97. In 1996-97, of the total sales, commercial vehicles were 2.97 lakh and cars 4.11 lakh. The growth rate of total automobile sales declined from 22.5 percent in 1995-96 to 13.3 percent in 1996-97. During the period from 1992-93 to 1996-97, automobile production and sales grew at a CAGR (Cumulative Annual Growth Rate) of 20.4 percent.

The year 1998 was one of the most difficult ones in the history of Tata Engineering and Locomotive Company Ltd (Telco). Economic slowdown in the country continued and the industrial growth rate, which had declined from

a healthy 12.8 percent in 1995-96 to 6.6 per cent in 1998-99. Within the automobile industry, the commercial vehicles shrank by nine percent over the previous year which in turn, was 35 percent lower than the year before. In short the market size for commercial vehicles shrank by 42 percent compared to the size in 1996-97. Telco operations were severally affected and turnover at Rs. 6637.05 crores in 1998-99 was 10 percent lower than the previous year.

The Government's initiative in maintaining fiscal discipline, coupled with several measures to restore economic growth to six percent targeted in the budget of 1999, resulted in an increase in the level of industrial activity and the automobile firms, including Telco, entered the new millennium with a more positive outlook.

Industrial slowdown during 1998-99 marginally affected sales of passenger cars, but the sales growth of two-wheelers remained positive with a rise of 12 percent according to consolidated figures for 1998-99 released by the Association of Indian Automobile Manufacturers (AIMA). The market leader MUL was affected by recession. A segment-wise analysis showed that except for Honda, other car makers present in the luxury and mid-size segments suffered reduction in sales. The sharpest decrease was registered by PAL whose sales stood at a mere 2,754 units as against 11,367 in the previous year. In the MUVs segment, the decrease was the highest at nearly 17 percent and across all manufacturers including M&HCVs, MUL and Bajaj Tempo. It appeared from the above table that the growth rate of production, sales of different segments of automobile industry was higher after 1990's as compared to the restricted policy period. The automotive industry was badly affected except motorcycle due to recession, high excise duty and hike in petrol / diesel prices during 1997-98 to 1998-99.

2.11 GROWTH OF AUTOMOBILE INDUSTRY (POST-LIBERALIZATION)

The automobile industry of India has witnessed an impressive growth in the early nineties due to several steps taken by the Government of India including changes in the excise duty on the different segments of automobile industry. The table as given below indicates high growth rate in all the segments.

Table 2.3 : Production of Automobile Industry

Figures in 000, units.

Year	Comm. Vehicles	Passenger Cars	MUVs	Two-wheeler	Three W. Vs	Total
2000-01	157	513	128	3759	203	4760
2001-02	163	564	106	4271	213	5317
2002-03	204	609	112	5076	277	6278
2003-04	275	842	146	5625	341	7229
2004-05	350	961	249	6527	374	8461
2005-06	391	1046	263	7600	434	9734
Total	1540	4535	1004	32858	1842	41779
Growth (%)	(-)2.00	11.7	18.6	15.12	16.8	14.97

Source: Society of Indian Automobile Manufacturers

An accumulative average growth rate between 2001-02 to 2005-06 has been taken for different segments. The data given in the above table indicates that passenger cars, Multi Utility Vehicles and two-wheelers have demonstrated considerable growth rate during the periods of 2000-01 to 2005-06.

All the segments of automobile industry have shown phenomenal growth during 2000-01 to 2005-06. However, a commercial vehicle has witnessed negative growth of 13.37 per cent between 2000-1 to 2005-06. The average annual growth rate of two-wheeler was the highest, i.e. 29.95 percent among all the segments during 2000-01 to 2005-06.

Overall the production of automobile industry consisting of the study has grown by 12.53 percent from 4760 thousand units in 2000-01 to 9734

thousand units in 2005-06. The buoyant Indian economy with a growth rate of around 8 percent per annum is further expected to fuel the growth of automobile industry in the country.

Table 2.4 : Annual Growth Rate

Year	Post-liberalization	Year	Post-liberalization
1995-96	30.73	2000-01	31.54
1996-97	15.41	2001-02	03.96
1997-98	22.9	2002-03	20.57
1998-99	-06.77	2003-04	38.24
1999-00	24.65	2004-05	18.18
Total	17.38	2005-06	22.50

Source : Computed from The Analyst (Chartered Financial Analyst, Dec. 2007)

After opening of the economy in 1993, the automobile industry has grown very fast due to the entry of global players. During the span from 1995-96 to 2005-06, the growth rate of the industry was very high due to increase in the income of middle income group people and lowering of the interest rate accompanied by a reduction in excise duty.

Table 2.5 : Growth of Selected Firms: Post-liberalization

Name of the Firms	Year (1995-2000) Mean (1995-96 to 1999-00)	Years (2000-2006) Mean (2000-01 to 2005-06)
Telco	39.07	27.00
Ashok Leyland	34.58	21.82
M&M	7.79	14.54
MUL	16.97	11.35
Hero Honda	38.24	26.38
Bajaj Auto	16.60	35.62
Hindustan Motors	21.54	-3.17

Source : Computed from Table 2.4

The leader firms have been selected in different segments on the basis of their highest contribution in the respective products. The firms mentioned in the above table registered positive growth rate except Hindustan Motors during the post-liberalization.

In this section, a review of automobile policy of 2002 has been presented.

2.12 AUTO POLICY (2002)

The success of a revised auto policy depends on the extent of demand stimulation through fiscal incentives both to the vehicle and the component. **The vision of this policy is to establish a globally competitive automobile industry in India and to double its contribution to the Indian economy by 2010.**

Policy Objectives

This policy aims to promote integrated, phased, enduring and self-sustained growth of the Indian automotive industry. The objectives are to:-

- i. Exalt the sector as a lever of industrial growth and employment and to achieve a high degree of value addition in the country;
- ii. Promote a globally competitive automotive industry and emerge as a global source for auto components;
- iii. ➤ Establish an international hub for manufacturing small, affordable passenger cars and a key center for manufacturing Tractors and Two-wheelers in the world;
- iv. Ensure a balanced transition to open trade at a minimal risk to the Indian economy and local industry;
- v. Conduce incessant modernization of the industry and facilitate indigenous design, research and development;
- vi. Steer India's software industry into automotive technology;
- vii. Assist development of vehicles propelled by alternate energy sources;
- viii. Development of domestic safety and environmental standards at par with international standards.

2.13 BACKGROUND

Automobile industry has universally emerged as an important driver in the economy. Although the automotive industry in India is nearly six decades old. Until 1982, only three manufacturers - M/s. Hindustan Motors, M/s. Premier Automobiles and M/s. Standard Motors tenanted the motor car sector. Owing to low volumes, it perpetuated obsolete technologies and was out of sync with the world industry. In 1982, Maruti Udyog Ltd. (MUL) came up as a government initiative in collaboration with Suzuki of Japan to establish volume production of contemporary models. After the lifting of licensing in 1993, 17 new ventures have come up of which 16 are for the manufacture of cars. This industry currently accounts for nearly 4% of the GNP and 17% of the indirect tax revenue.

2.14 EXTANT POLICY

Before the removal of QRs with effect from 01-04-2001, the policy placed import of capital goods and automotive components under open general licence, but restricted import of cars and automotive vehicles in Completely Built Unit (CBU) form or in Completely Knocked Down (CKD) or in Semi Knocked Down (SKD) condition. Car manufacturing units were issued licences to import components in CKD or SKD form only on executing a Memorandum of Understanding (MoU) with the Director General Foreign Trade (DGFT). 11 companies signed MoUs with DGFT under which they agreed to:

- i. Establish actual production of cars and not merely assemble vehicles;
- ii. Bring in a minimum foreign equity of US \$ 50 Million if a joint venture involved majority foreign equity ownership;
- iii. Indigenise components upto a minimum of 50% in the third and 70% in the fifth year or earlier from the date of clearance of the first lot of imports. Thereafter the MoU and import licensing will abate;

- iv. Neutralize foreign exchange outgo on imports (CIF) by export of cars, auto components etc, (FOB). This obligation was to commence from the third year of start of production and to be fulfilled during the currency of the MoU. From the fourth year imports were to be regulated in relation to the exports made in the previous year.

2.15 CURRENT STATUS OF INDIAN AUTOMOTIVE INDUSTRY

The industry encompasses commercial vehicles, multi-utility vehicles, passenger cars, two wheelers, three wheelers, tractors and auto components. There are in place 15 manufacturers of cars and multi utility vehicles, 9 of commercial vehicles, 14 of two / three- wheelers and 10 of tractors besides 5 of engines. With an investment of Rs.50, 000 crores, the turnover was Rs. 59,500 crores in Automotive Sector during the year 1999-2000. It employs 4, 50,000 people directly and 100, 00,000 people indirectly and is now inhabited by global majors in keen contention. India manufactures about 38,00,000 two-wheelers; 5,70,000 passenger cars; 1,25,000 Multi Utility Vehicles; 1,70,000 Commercial Vehicles and 2,60,000 tractors annually. India ranks the second in the production of two wheelers and the fifth in commercial vehicles.

India's automotive component industry manufactures the entire range of parts required by the domestic automobile industry and currently employs about 250,000 persons. Auto component manufacturers supply to two kinds of buyers – original equipment manufacturers (OEM) and the replacement market. The replacement market is characterized by the presence of several small-scale suppliers who score over the organized players in terms of excise duty exemptions and lower overheads.

2.16 MEASURES TO REALIZE THE POLICY OBJECTIVES

- i) Initiatives relating to investment, tariffs, duties and imports will be the instruments to achieve the Policy objectives. These pave way to the government's economic reform and are in harmony with the commitments made to WTO.
- ii) Increased resource allocation to the highways sector to ensure collateral upgradation and development of road infrastructure in step with the increase in the number of vehicles.
- iii) An appropriate regulatory framework for smooth movement of traffic, safety and environmental aspects.

2.17 FOREIGN DIRECT INVESTMENT

Automatic approval for foreign equity investment up to 100% of manufacture of automobiles and components is permitted.

2.18 IMPORT TARIFF

The incidence of import tariff will be fixed in a manner so as to facilitate the development of manufacturing capabilities as opposed to mere assembly without giving undue protection; ensure balanced transition to open trade; promote increased competition in the market and enlarge purchase options to the Indian customer.

The Government will review the automotive tariff structure periodically to encourage demand, promote the growth of the industry and prevent India from becoming a dumping ground for international rejects.

In respect of items with bound rates viz. Buses, Trucks, Tractors, CBUs and Auto components, the Government will give adequate accommodation to indigenous industry to attain global standards.

In consonance with Auto Policy objectives, in respect of unbound items i.e., Motor Cars, MUVs, Motorcycles, Mopeds, Scooters and Auto Rickshaws, the import tariff shall be so designed as to give maximum fillip to manufacturing in the country without extending undue protection to domestic industry.

The conditions for import of new Completely Built Units (CBUs), will be as per Public Notice issued by the Director General Foreign Trade (DGFT) having regard to environment and safety regulations.

Used vehicles imported into the country would have to meet CMVR, environmental requirements as per Public Notice issued by DGFT laying down specific standards and other criteria for such imports.

Appropriate measures including anti-dumping duties will be put in place to check dumping and unfair trade practices.

2.19 EXCISE DUTY

(a) Motor Cars

- i) The ownership of cars in India is just 6 per thousand of population as against 500 in the developed economies. The contribution of the auto sector to the GDP and employment is likewise low. Expansion of local demand holds great potential and is vital to install scale volumes of production.
- ii) Domestic demand mainly revolves around small cars not exceeding 3.80 meters in length. Small cars occupy less of road space and save on fuel. These capture more than 85% of the market. India can build export capability and become an Asian hub for export of small cars. The growth of this segment needs to be spurred.

(b) Multi Utility Vehicles

MUVs are an important mode of economical mass transport in rural India due to poor road infrastructure and lack of good State Transport system. They are the first vehicles purchased by a number of farmers, traders, small businessmen in rural and semi-urban markets. The Government will endeavour to provide fiscal incentives to this sector.

(c) Commercial Vehicles

- (i) Presently excise duty on commercial vehicles sold by a manufacturer whether as a chassis or with a complete body is 16%. However, no duty is levied on the body that is built by an independent body builder or chassis bought from a manufacturer. This dispensation inveighs production of the complete trucks and buses by the chassis manufacturer and is detrimental to safety standards. The duty imposed on the construction of bodies by an independent body builder and small or organized sector, shall be equal to that of bodies built by a chassis manufacturer.
- (ii) The Government will encourage fabrication of bus body on bus chassis designed for better passenger comfort instead of truck chassis as is the current practice.
- (iii) The Government will promote the use of multi-axle vehicles for carriage of goods as they cause reduced environmental pollution and lesser wear and tear on road surface in comparison to the existing 2-axle trucks.

2.20 IMPROVING ROAD INFRASTRUCTURE

Traffic on roads is growing at a rate of 7 to 10% per annum while the vehicle growth rate for the past few years is of the order of 12% per annum. Poor road infrastructure and traffic congestion can be a bottleneck in the

growth of vehicle industry. A balanced and coordinated approach will be undertaken for proper maintenance, upgradation and development of roads by encouraging private sector participation besides public investment and incorporating latest technologies and management practices to take care of the increase in vehicular traffic.

For the convenience of traveling, the Government shall also promote multi-modal transportation and the implementation of mass rapid transport systems.

2.21 INCENTIVE FOR RESEARCH AND DEVELOPMENT

The Government shall promote Research & Development in automotive industry by strengthening the efforts of industry in this direction by providing suitable fiscal incentives.

The current policy allows Weighted Tax Deduction under I.T. Act, 1961 for sponsored research and in-house R&D expenditure. This will be improved further for research and development activities of vehicle and component manufacturers from the current level of 125%.

In addition, Vehicle manufacturers will also be considered for a rebate on the applicable excise duty for every 1% of the gross turnover of the company expended during the year on Research and Development carried either in-house under a distinct dedicated entity, faculty or division within the company assessed as competent and qualified for the purpose or in any other R&D institution in the country. This would include R & D leading to adoption of low emission technologies and energy saving devices.

Government will encourage setting up of independent auto design firms by providing them tax breaks, concessional duty on plant/equipment imports and granting automatic approval.

Allocations to automotive cess fund created for R&D of automotive industry shall be increased and the scope of activities covered under it be enlarged.

2.22 BUILDING BYE LAWS FOR RESIDENTIAL, COMMERCIAL AND OTHER USES

With the growth of vehicles, smooth traffic movement has come under severe strain. The problem has been aggravated because of inadequate provision of parking facilities generally found in metropolitan and important towns. The Government will pursue with State Governments and Local bodies amendments to bye laws for upward revision of the parking norms for new residential buildings, construction of common parking for existing residential areas besides parking upgradation in all commercial areas. Multi-storeyed parking shall also be encouraged.

2.23 ENVIRONMENTAL ASPECTS

The automotive and oil industry have to heave together to constantly fulfill environment imperatives. The Government will continue to promote the use of low emission fuel auto technology.

The Government after considering the recommendations of the Expert Committee on Auto Fuel Policy headed by Dr. R.A. Mashelkar, has approved a road map for implementation for the auto fuel quality consistent with the required levels of vehicular emissions norms and environmental quality. The Government will formulate a comprehensive auto fuel policy covering the other related aspects and ensure availability of appropriate auto fuel/fuel-mixes at minimum social costs across the country. Suitable institutional mechanism will be put in place for certification, monitoring and enforcement of different technologies/fuel mixes. Appropriate fiscal measures will be devised to achieve milestones in the roadmap for implementation of auto fuel policy.

In the short run, the Government will encourage the use of short chain hydrocarbons along with other auto fuels of the quality necessary to meet the vehicular emission norms.

There is a prime need to support the development and introduction of vehicles propelled by energy sources other than hydrocarbons by promoting appropriate automotive technology. Hybrid vehicles and vehicles operating with batteries and fuel cells are alternatives to the conventional automobile, which in their early beginnings, lie intreasured. As an impetus for the development of such vehicles, an appropriate long-term fiscal structure shall be put in place to facilitate their acceptance vis-à-vis vehicles based on conventional fuels.

Internationally, the practice is to levy higher road tax on older vehicles in order to discourage their use. In India, the road tax on vehicles varies in nature and quantum among the states. Lifetime road tax is also in vogue. The endeavour will be to move to the international model.

In order to facilitate faster upgradation of environmental quality, the Govt. will consider to have a terminal life policy for commercial vehicles along with incentives for replacement for such vehicles.

2.24 SAFETY

Government will duly amend the Central Motor Vehicles Rules, Bureau of Indian Standards (BIS) and other relevant provisions and introduce safety regulations that conform to the global standards.

Testing and certification facilities need to be revised and strengthened in accordance with the safety standards of global order. The Government, in partnership with industry, will tend to this requirement.

2.25 HARMONISATION OF STANDARDS

The Government recognizes the need for harmonization of standards in a global economy and will work towards it.

2.26 LONG-TERM AUTO POLICY: IMPLICATIONS

The Government will seek the views of the automobile industry for framing a long-term auto policy. SIAM has reportedly been asked by the Industry Ministry to prepare a comprehensive draft on auto policy with a 10-15 year perspective. Since the fortunes of the auto and component industries are closely inter-related, it would but be fair to take into account ACMA's suggestions also. In the process, the Government will take care to see that the policy that finally emerges is a fully integrated one designed for the simultaneous growth of both the sectors. True, the vehicle and component manufacturers have been working in unison towards making the Indian automobile industry competitive enough in the emerging world scenario. They agree on major issues, and the minor differences on certain issues need to be easily sorted out.

The changes proposed by SIAM include a provision for making the MoU policy applicable to all players in the industry and not merely to the passenger car segment; discouraging new entrants into the field till 2010 to provide the existing players enough time to consolidate their position; application of localization norms at the company level instead of at the model and platform level; and adequate incentives to the industry to help it move towards a forex neutrality regime. The most important demand is for a cut in excise duty from 40 percent to 25 percent, which will ultimately lead to a drop in vehicle prices by 12-24 percent and rise in demand by 24-28 percent by 2010.

ACMA echoes a similar view when it says that a well-defined, long-term auto policy will be successful only if it ensures demand stimulation through fiscal incentives. Being capital incentive and demand sensitive,

reduction in product prices following a tax cut would result in substantial demand expansion. Increasing volumes by stimulating demand could lead to a virtual circle of viable costs of localization. This would imply a greater localization, lower cost for the consumer and higher export.

ACMA still maintains that the MoU policy is not perfect, but is happy that it has proved extremely beneficial to the component makers, since indigenization has received the much-needed push over the last two-three years. The policy has encouraged vehicle manufacturers to develop a new supply base and has helped in bringing world technology into the country. However, the vehicle industry has its own reservations on the policy. While its implicit objectives necessitating increased value addition within the country are right for passenger cars

It is this and other points of disagreement between the vehicle and component manufacturers that the Government has to take into account while formulating a long-term auto policy. The other factors for consideration include the surprise announcement of the steepest ever hike of 40 per cent in diesel cost. The higher diesel price will have its adverse impact on the prices of both raw materials and finished products being transported from one part of the country to another.

Following the lifting of quantitative restrictions, the Government of India announced import rules for used and new vehicles through Notification No. 4 (RE-2001)/1997-2002 dated 31st March 2001. India declares the reason for the measures to be road safety and environmental friendly. All imported vehicles are subject to the following conditions. Right hand steering and controls, speedometer indicating the speed in kilometers and photometry of the headlamps to suit to keep left. In addition, they have to conform to the provisions of the Motor Vehicle Act, 1988. A new imported vehicle is defined as follows: It should not have been manufactured or assembled in India; neither been sold, leased or loaned prior to importation into India nor been

registered for use in any country, prior to importation into India. New vehicles have to be imported from the country of manufacture and their import is permitted only through the Customs port at Nhava Sheva, Calcutta and Chennai. The provisions of the notification do not apply to the imports of new vehicles for the purpose of certification, defence requirements or for the purpose of R&D by vehicle manufacturers.

For the imports of new vehicles a valid certificate of compliance as per the provisions of rule 126 of Central Motor Vehicle Rules (CMVR), 1989 is required. The importer is responsible for all the provisions assigned to the manufacturer as per Rules 122 and 138 of CMVR and for issuing Form 22, as per provisions of CMVR. In addition, he should give an undertaking in writing. The proof of compliance to conformity of production as per the rule 126A of CMVR shall be submitted within six months of the imports.

The imported second hand or used vehicles shall not be older than 3 years from the date of manufacture. Imports of these vehicles are allowed only through the customs port at Mumbai. The second hand or used vehicles imported into India shall have a minimum roadworthiness for a period of 5 years from the date of importation into India with assurance of providing service facilities within the country during the five-year period. For this purpose, the importer at the time of importation has to submit a declaration.

At the time of importation, the importer must have a certificate issued by a testing agency that the second hand or used vehicle being imported into India has been tested immediately before shipment for export to India and that the said vehicle conforms to all the regulations specified in the Motor Vehicles Act, 1988. Also, a certification has to be submitted that the said vehicle conforms to the original homologation certificate issued at the time of manufacture. On arrival at the Indian port but before clearance for home consumption, the importer has to get the second-hand or used vehicle tested by the Vehicle Research and Development Establishment, or Automotive

Research Association of India, or Central Farm Machinery Training and Testing Institute and other agencies specified by the Central Government.

Through Notification No. 31 (RE-2001)/1997-2002 of 14 September 2001, imports of vehicles by foreign diplomats and other privileged persons in this category, who are exempt from payment of customs duty, are exempt from all the conditions of Notification No. 4. However, such imported vehicles cannot be sold in India except to another diplomat or privileged person and are compulsorily required to be re-exported. This exemption is applicable on all imports made subsequent to 31 March 2001.

In June 2002, within the context of the WTO Trade Policy Review (TPR), India stated the following "Certain regulations have been prescribed on the import of new and second hand or used vehicles on 31.03.2001, in order to ensure consumer protection, road safety and pollution control. These conditions have been imposed for complying with the provisions of the Central Motor Vehicles Act, 1988 and the Rules made there under, which are equally applicable on domestically produced vehicles. The condition of used/second hand vehicles more than 3 years old not being allowed for import has been imposed because of non-availability of spare parts and lack of service chain which would jeopardize consumer protection and road safety." Now we will examine how the new automobile policy of 2002 will affect the automobile industry in India.

SIAM welcomed the announcement of Auto Policy, and feels that the policy would serve as a reference document for all stakeholders and other interested parties.

The Auto Policy has spelt out the direction of growth for the auto sector in India and addresses most concerns of the automobile sector, including-

- Promotion of R&D in the automotive sector to ensure continuous technology upgradation, building better designing capacities to remain competitive.
- Impetus to Alternative Fuel Vehicles through appropriate long term fiscal structure to facilitate their acceptance.
- Emphasis on low emission fuel auto technologies and availability of appropriate auto fuels and encouragement to construction of safer bus/truck bodies - subjecting unorganized sector also to 16% excise duty on body building activity as in case of OEMs

The policy has rightly recognized the need for modernizing the parc profile of vehicles to arrest degradation of air quality. The terminal life policy for commercial vehicles and move towards international taxing policies linked to the age of vehicles, are some of the important steps in the right direction.

There should be encouragement of value addition within the country against a mere trading activity. However, this aspect has not been fully addressed. The Auto Policy allows automatic approval for foreign equity investment up to 100% in the automobile sector and does not lay down any minimum investment criteria.

The recommendation of promoting passenger cars of length upto 3.8 meters through excise benefits is not in line with the free market concept and may lead to market distortion.

However, with the Auto Policy in place, the automobile industry would get further fillip to become vibrant and globally competitive. The industry would get the required support from other Ministries and the various departments of the Government of India in achieving the goals laid down in the auto policy. It will also be important to find out the effects of WTO on Indian automobile industry.

2.27 NEED FOR A COMPREHENSIVE AUTOMOBILE POLICY

The extant policy has drawn many overseas companies into India but it needs to be more investor friendly, should address emerging problems and be WTO compatible. The Indian car market is full of possibilities; but present demand profile inhibits volume production, and contributes quarrel rather than competition. World over, the majors players have consolidated to elevate technology, enlarge product range, access new markets, cut costs and ingraft versatility. They have resorted to common platforms, modular assemblies and systems integration by component suppliers and E-Commerce.

The automobile industry is in the midst of a major structural transformation in today's globalised scenario. "System Supply" of integrated components and sub-systems are becoming the order of the day, with individual small components being supplied to the system integrators instead of the vehicle manufacturers. In this process, most of the SSI units manufacturing smaller individual components are on their way to become tier 2 and tier 3 suppliers, while the larger companies including the most of the MNCs are being transformed into tier 1 companies, which purchase from tier 2 & 3, and sell to the auto manufacturers.

Indian auto sector needs to grow collaterally and in harmony with the world industry. India has the potential to be a global automotive power. However, concrete efforts will be required to take auto manufacturing to a self-sustaining level where they shall have volumes and can generate requisite technology and meet evolving emission requirements.

Volume is important for any manufacturing enterprise. However, it is more important for automobile sector, both for the manufacture of vehicles as well as auto components. Lack of volume will inhibit not only efficient manufacture but also R&D and introduction of new models. The investment

and fiscal policies should create an environment for volume production and indigenous capability for innovation for small cars and auto components.

Auto components manufacturers have been slowly gaining global recognition and maintaining a certain level of exports despite the recent downturn. It should be possible to achieve an export target of US \$ 2.7 billion by 2010. This would require a three pronged marketing strategy: exports through OEMs for their global sourcing requirements, export to tier I manufacturers as a part of their international supply chain and direct exports to aftermarket. The main challenges are low-volume scale, fragmentation, inadequate R&D/technology support, lower productivity levels, limited resources for international marketing and for establishment an efficient supply chain.

This Chapter focused on industrial policy persuaded by the Government of India from 1948 until 1983 which did not witness the growth of automobile industry in India. With the opening of the Indian economy in the early eighties and nineties, the automobile industry has undergone drastic changes due to the entry of global players in all the segments of the automobile industry. As a result, the industry has shown a remarkable growth in terms of sales, number of firms, number of products and models. Now let us deal with the structure of an automobile industry in the next Chapter IV.

Chapter - III

Structure of Automobile Industry in India

Chapter - III

STRUCTURE OF AUTOMOBILE INDUSTRY IN INDIA

This Chapter attempts to understand the structure of the automobile industry in India. The purpose of this chapter is to find out the number of firms engaged in the production of vehicles in different segments. This will be studied from the point view of different models introduced by the leading automobile firms. The study will find out why some firms achieve higher growth while other experiences lower growth rate. The main objective of this chapter is to focus on the structure of automobile firms and to examine the reasons why some firms were not successful.

3.1 INTRODUCTION

The Indian automobile industry consists broadly of two distinct segment, vehicle manufacturers and ancillary manufacturers. The vehicle manufacturing segment comprises firms, which are engaged in the manufacture of Cars, Jeeps, Buses and Trucks, Two Wheelers, Three Wheelers and a variety of other commercial vehicles. The ancillary manufacturing firms are engaged in the manufacture of spare parts of automobiles.

The importance of establishing an automobile industry was recognized by the Govt. of India soon after World War-II in 1945 and a Panel on Automobile and Tractors was constituted to make recommendations on the development of manufacturers of automobile and tractors in India.

The panel recommended a number of measures including duty free import of raw materials, machinery and capital equipment by the concerns, and grant of local facilities in the matter of land acquisition, power and water

etc. In the industrial policy of 1948, automobile industry was brought under regulation and control by the central Govt. In 1949, govt. decided that import of motor vehicles should be allowed only in c.k.d. (Completely knocked down) condition for one more year.

These measures were not sufficient since the import of car had badly affected the sale of the two Indian Automobile Firms. At the same time there was a fall in demand for Indian cars causing further reduction in sales of their cars. Due to unwanted fall in sales, Hindustan Motors Ltd., remain closed from April 1952 to July 1952. Govt. of India, after realizing the situation in regard to problem of these two firms, imposed restrictions on the import of cars. No imports of Automobiles were allowed from July to December, 1952 except in the case of Mahindra & Mahindra Ltd

The Tariff Commission set up in 1953 to examine ways of establishing an indigenous automotive industry, recommended to the Government to disallow assemblers of imported kits. Govt. agreed with the Commission's recommendation for the fast development of the automobile industry. Govt. accepted the view that the high rate of import duty did not help the industry and was causing a fall in demand. Govt. therefore, agreed to reduce import duty on the components.

To encourage indigenous manufacture, the Govt. of India then announced in 1950 that importers or assemblers who did not have a manufacturing programme would not be considered for the allocation of foreign exchange for imports of vehicles. . The Govt. of India, of course, gave small concession to Hindustan Motor Ltd. and Premier Automobile in 1951 in the matter of exchange allocation to the import of vehicles. This was in recognition of the progress made by these two Indian automobile firms in process of their manufacturing process Again in 1953, the Indian Govt. on the basis of Tariff Commission Report asked the assemblers of imported vehicles to terminate their activities within a period of three years. Thus the limited

market for vehicles was protected only for those units who had a genuine programme for the progressive manufacture of automobiles.

These measures, of course, benefited the indigenous automobile firms in India. Consequently, only five companies were permitted to continue their operations. There were, Hindustan Motors, Premier Automobile, and Automobile Products of India. Ashok Leyland (formerly Ashok Motor Ltd.) and Standard Motors Products of India. Subsequently, one of the aforesaid companies namely, the Automobile Products of India gave up its vehicle manufacturing programme. Later on, the following three more companies joined the industry.

- i. Mahindra & Mahindra
- ii. Telco
- iii. Bajaj Tempo was registered in 1958.

Three companies namely Hindustan Motors, Premier Automobile and Standard Motor Products of India produced cars and jeeps were manufactured by Mahindra & Mahindra only.

The Indian automobile industry was highly regulated and protected until the early 1980's. Strict licensing controls restricted capacity expansion and the products. In 1984, the Govt. of India realized that reforms process is of key importance for the expansion of the said industry. The Govt. relaxed the regulation process. As a part of the reform process ,(which began in learly 1980's and 1990's), industrial licensing for the automobile sector was abolished and import duties on vehicle components have been reduced, and excise and custom duties on vehicles were lowered.

1984 was the year of revolution in the Indian automobile industry when after about 40 years of domination by the Birla group's Hindustan Motors and Premier Auto Ltd; the first indo-Japanese joint venture started production of the Maruti –Suzuki Car. A host of other collaborations between

India and Japanese companies to produce cars, LCV, Scooters and Motorcycles were signed up in 1983-84. With the end of the Birla monopoly, the Government of India removed its control on the Indian automobile industry which marked the beginnings of competition in the various segments of the automobile industry.

The opening up of Indian economy in 1990's has completely changed the outlook of all segments automobiles firms in India. New models of cars, jeeps, and motorcycles, Mopeds are seen on the roads which have ultimately received the attentions of buyers. This has certainly boosted in sales of various types of vehicles and thus growth has taken place in the said industry.

3.2 SEGMENTATION OF AUTOMOBILE INDUSTRY

The Indian Automobile Industry has been the engine of growth since the World War-II. The industry has assumed an important position in nearly every aspect of economic and social life. The health of certain industries like steel, sheet glass, fiber, for going and paints depends largely on the growth of automobile sector. This industry plays a vital role in the economy of a country right from the production of raw materials to the distribution of finished products. Thus, its plays a dominant role not only in the economic and political sphere but also in the social sphere and it has considerably influenced the life of people. The manufacturer of these automobiles requires several inputs like iron, steel, oil paint, plastic and varnish, rubber, non ferrous metals, casting and forging. Consequently, the automobiles industry has a manifold accelerating effect on activities in several sectors of the economy.

At present, there all 47 firms as per reports given in (CMIE: Industry July 2007) engaged in producing M & H and light commercial vehicles, Three Wheelers, passenger cars, multi utility vehicles, scooters, motor cycles and Mopeds. The active firms, which contribute significantly, have been taken into consideration in this study.

Broadly speaking the Indian automobile sector can be divided in to three segments:

Two Wheelers

- (a) Scooters
- (b) Motorcycles
- (c) Mopeds

Three Wheelers

- (a) Scooters – Auto Rickshaw
- (b) Scooter – Pick – up Van

Four wheelers

- (a) Cars and UVS (Utility Vehicles)/ GPVS (General Purpose Vehicle) or Jeeps
- (b) LCVS (Light Commercial Vehicles)
- (c) MCVS (Medium Commercial Vehicles), and
- (d) HCVS (High Commercial Vehicles)

Four wheelers are categorized into cars, UVS and CVS. CVS are those used for transport goods (Trucks and Pick-ups) or mass passengers transport, and buses further are classified into light, medium and heavy based on the carrying capacity, known as payload.

The chart given below indicates leader firm in each segment on the basis of market share. Ashok Leyland enjoys leadership in the segment of M&HCVs while Telco maintains its leadership in LCVS segment.

3.3 FIRMS ENGAGED IN THE PRODUCTION OF FOLLOWING PRODUCTS

(M&H Commercial Vehicles)	
1.Ashok Leyland	Leader firm
2.Hindustan Motor Limited	
3.Telco	
(Light Commercial Vehicles)	
1.Bajaj Tempo Limited	
2.Daewoo Motors (India) Ltd.	
3.Eicher Motors Ltd.	
4.Mahindra & Mahindra Ltd.	
5.Swaraj Mazda Ltd.	
6.Telco	Leader firm
(Passenger Cars)	
1. Daewoo Motors (India) Ltd	
2. General Motors Ltd.	
3. Hindustan Motors Ltd.	
4. Honda Siel Cars India Ltd.	
5. Hyundai Motor India Ltd.	
6. Ford Motor.	
7. Mahindra Ford India Ltd.	
8. Maruti Udyog Ltd.	Leader Firm
9. Mercedes Benz India Ltd.	
10. PAL – Peugeot Ltd.	
11. Premier Automobile Ltd.	
12. Telco	

The firm which enjoys highest market share in every segment of automobile industry has been assumed as the leader. For instance, In case of Passenger car segment, MUL still enjoys its market leadership despite the

entry of several firms. MUL continued to grab 43 percent market share in this segment as it is shown in the below table. So far as multy utility vehicle is concerned M&M, undoubtedly, is the market leader in the segment of MUVs.

(Multi Utility Vehicles)	
1. Bajaj Tempo Ltd.	
2. Hindustan Motors Ltd.	
3. Mahindra & Mahindra Ltd.	Leader Firm
4. Maruti Udyog Ltd.	
5. Telco	
(Scooters)	
1. Bajaj Auto Ltd.	Leader
2. Kinetic Honda Motors Ltd.	
3. LML Ltd.	
4. Maharashtra Scooters Ltd.	
5. Scooter India Ltd.	
6. TVS Suzuki Ltd.	
(Motorcycles)	
1. Bajaj Auto Ltd	
2. Escorts Yamaha Motor Ltd.	
3. Hero Honda Motors Ltd.	Leader Firm
4. Ideal Gawa	
5. Royal Enfield Motors	
6. TVS Suzuki Ltd.	

Bajaj Auto maintains its leadership in scooter while Hero Honda continued to grab its highest market share in motorcycle.

3.4 PROFILE OF THE AUTOMOBILE FIRMS IN INDIA

In this section, attempts have been made to study the profile of the automobile firms regarding the recent growth, type of product and technological collaborations. We will focus on two-wheelers and four-wheelers.

The progressive liberalization of the norms for foreign investment and import of technology appears to have benefited the automobile sector with production of total vehicles increasing from 4.2 million in 1998-99 to 9.7 million in 2005-06. It is likely that the production of such vehicles will exceed 10 million in the next couple of years. The global standards achieved by the industry have manifested in the increasing exports of the sector. After a temporary slump during 1998-99 and 1999-00, such exports registered robust growth rates of well over 50 per cent in 2002-03 and 2003-04 respectively.

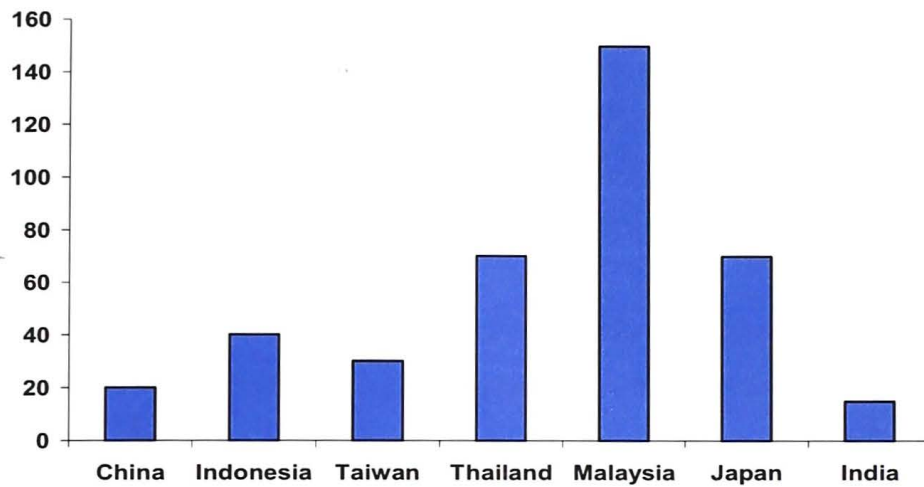
3.4.1 Structure of the Two-wheeler Segment

This section is devoted to the study of selected firms in terms of products & brands, which will reflect the growth of selected auto firms..

The two-wheelers market is divided between four major players led by Bajaj Auto limited, Hero Honda, TVS Suzuki, Yamaha.

India is the second biggest two wheeler producer in the world. Bajaj Auto limited started manufacturing of scooter with collaboration with vespa of Italy in . BAL has become the largest manufacture of scooters in the world. The two-wheeler auto firms are divided into three segments, a) scooter, b) motorcycle and c) Mopeds. The study is only concerned with scooter and motorcycles. The per-capita availability of two-wheelers in India is one of the lowest in the developing world indicating a huge latent demand.

Fig. 3.1 : Per-capita Availability of Two-wheelers



Source: AIAM

In the above figure, it is shown that Malaysia has the highest per-capita availability of two-wheelers in the world.

The Two-wheeler segment has taken roots in India. BAL which started in collaboration with Vespa of Italy has become the largest manufacture of Scooters in the world. India is the second biggest two-wheeler producer in the world. The per capita availability of two-wheelers in India is one of the lowest in the developing world implying huge latent demand.

We will consider a brief review of two-wheeler firms which have made considerable contribution in the growth of automobile industry in India.

3.4.2 Bajaj Auto Limited

Bajaj Auto Limited started manufacturing in 1960 in technical collaboration with M/S. Piaggio & Company, Italy .The scooters were sold in the market under the name “VESPA”. After the collaboration agreement is expired, the firm started marketing its product under the name “BAJAJ”. In

1961, the firm also started manufacturing of Three Wheelers with technical collaboration of M/S. Piaggio & company Italy. In 1978, the firm developed with in house technology of motorcycle and introduced a 50cc brand called M50 which was later upgraded as M80. In 1983, the firm entered into a technical collaboration agreement with Kawasaki Heavy Industries, Japan for manufacturing of 100cc Motorcycle. In 1990, the firm developed within house technology, a 50cc Moped marketed under the name “SUNNY”.

Bajaj Auto Ltd. is the largest exporter of two and three -wheelers. With Kawasaki Heavy Industries of Japan, Bajaj manufactures state-of-the-art range of two-wheelers. The brand, Pulsar is continuously dominating the Indian motorcycle market. Its Discover DTS is also a successful bike on Indian roads. Bajaj’s motorcycle –Bajaj Discover, Bajaj Pulsar DTS and Bajaj Pulsar 200 are successful bikes on Indian roads.

Table 3.1 : Products and Brands

Products	Brands		
Motorcycles	1. Bajaj Avenger	6. Bajaj CT 100	11. Bajaj Discover
	2. Bajaj Pulsar	7. Bajaj Wind	12. Boxer
	3. Caliber	125	13. Kawasaki
	4. KB100	8. Caliber115	Bajaj
	5. 4S	9. KB RTZ	Eliminator
		10. 4S Champion	14. KB125

It is one of India's top ten companies in terms of market capitalization and among the top five in terms of annual turnover. Established in 1945, it was incorporated as a trading company. From 1948 till 1959, it imported scooters and three wheelers from Italy and sold them in India. It then obtained a production license in 1959 and struck a technical collaboration with Piaggio of Italy in 1960.

The Company's second plant was set up in 1984 at Aurangabad, in Maharashtra State. In this plant, scooter production commenced in 1986; three wheeler productions commenced in 1987; and scooterettes and motorcycle facilities were commissioned in 1990 & 1991 respectively. Bajaj is mostly concentrating in the production of motorcycle rather scooter.

Bajaj is the second largest producer of motorcycle in India and it has achieved desired growth rate through introducing various models in motorcycle. The customers have the advantages of selecting the bike according their choice. Thus such firm grows faster and more will be discussed in the chapter 5.

3.4.3 Hero Honda Motors Ltd.

The firm entered into financial and technical collaboration agreement with M/S. Honda Motors Co. Ltd. Japan in 1984. The motorcycles are sold under the brand name "CD 100" and "CD 100 SS". In 1995 the firm introduced new model "Sleek". The firm has the highest market share in the motorcycle segment

Hero Honda has a reputation of being the most fuel-efficient and the largest selling Indian motorcycle. Its commitment of providing the customer with excellence is self-evident. A rich background of producing high value products at a reasonable price led the world's largest manufacturer of motorcycles to collaborate with the world's largest bicycle manufacturer.

Over the years, the Company has received its share of accolades, including the National Productivity Council's Award (1990-91), and the Economic Times - Harvard Business School Association of India Award, against 200 contenders.

Table 3.2 : Products and Brands

Products	Brands			
Two-Wheelers	Achiever	CBZ*	CD100SS	CD DAWN
	CD Deluxe	Glamour	Karizma	Passion Plus
	Pleasure	Splendor+*	Super Splendor*	

*Major Brands

Outlook

Honda will continue to provide Hero Honda with full and latest technological support. Both of them will develop and expand the two-wheeler business in the country. They agree to strengthen model line up. Honda Motor Co. Ltd., Japan, renewed its Technical Collaboration Agreement for another 10 years, uptill 2014.

According to Mr. Brijmohan Lall, Chairman, Hero Honda Motors Limited, Hero Honda is a 'Showcase' of an ideal partnership where both the partners have combined their unique strengths and have successfully created the 'World's No. 1' two-wheeler company. Two-wheelers in India is a synonymous to the brand Hero Honda, a unit of Hero Group. Established in 1984 as a joint venture of The Hero Group (India) and Honda Motor Co. Ltd. (Japan), Hero Honda is the 'world's No. 1' two-wheeler company.

3.4.4 Kinetic Motor

Kinetic Engineering Ltd., founded in the year 1970, is the leading manufacturer and exporter of 2-wheelers. Born of the vision of the late Shri H. K. Firodia, Kinetic Engineering Ltd., it has produced useful, heart - winning products for over two decades. KEL manufactures a wide range of Mopeds,

Scooters and Motorcycles that are very popular in the country and are well recognized for their fuel economy, quality and reliability.

KEL has 3 manufacturing plants at Ahmednagar, Pitampur (Indore) and Goregaon (Pune) with the capacity to manufacture 4 lakh vehicles per year. Their well endowed technologically advanced manufacturing set up have enabled them to reach high quality standards. The company also exports these vehicles to countries like USA, Canada, Sweden, Latin America, Denmark and the Middle East. The Kinetic Honda - 100cc bike is a very popular choice among two wheeler motorists in the country.

Motorcycle

Kinetic Aquila Kinetic Boss Kinetic Challenger

Kinetic Comet Kinetic GF Kinetic Stryker

Kinetic Velocity

3.4.5 Yamaha Motors India Pvt Ltd.

Yamaha Motors India (YMI) is a 100% subsidiary of Yamaha Motor Corporation of Japan. The company has its manufacturing unit in Faridabad and Surajpur, which supports the production of motorcycles for domestic as well as overseas market. Presently 10 models roll out of this two plant.

Product and Brand

- Yamaha Alba
- Yamaha Crux
- Yamaha Gladiator
- Yamaha Libero G5
- Yamaha MT 01
- Yamaha YZF R1

Yamaha Motor Company, founded as a motorcycle manufacturer on July 1, 1955, have worked, since beginning, to build products that stand out for their quality wherever they are sold. Over the years, the company has diversified into a number of areas of business. In the year 1960, they began manufacturing powerboats and outboard motors. Subsequently, they have made their proprietary engine and fiberglass-reinforced plastic (FRP) technologies. Today, the company has extended their products from land to sea and even into the skies, with manufacturing and business operations that include motorcycles, PAS electro-hybrid bikes, marine and power products to automotive engines, "intelligent" machinery and even unmanned helicopters.

Yamaha Motor India (YMI) was incorporated in India in August 2001 as a 100% subsidiary of Yamaha Motor Corporation (Japan), the parent company. But it operated in India as technology provider for almost two decades before incorporation.

The company's manufacturing facilities in India comprises of 2 state-of-the-art plants, one at Faridabad (Haryana) and the other at Surajpur (Uttar Pradesh). Presently 10 models roll out of the two Yamaha Plants. The infrastructure of the two plants support productions of motorcycles and it's parts for both, the domestic as well as overseas market.

3.4.6 TVS-Suzuki Limited

The firm manufactures motorcycles since 1984. The firm entered in to collaboration agreement with M/S.. Suzuki. Motor Company Ltd. Japan in 1982 for manufacture of 100 cc motorcycle. The firm sells it product under the brand name "AX100".

The two-wheeler major TVS Motor Company is planning to introduce a 150cc variant and a new 180cc category bike early 2006. The company has announced the launch of three new-generation two-wheelers-Victor Edge, Star City and Scooty Pep Plus. It already had Fiero in the 150cc category. With the

launch of these new models, the company hopes to increase its sales by 25 per cent in 2005-06.

Of course, the TVS did well in the past. In 2001, it introduced the Victor with in-house technology, which was a great success. But, the company could not launch afterwards any other motorcycle with the same degree of success.

3.4.7 Royal Enfield India

It is well said that you can make friends in distant lands with Royal Enfield. The models mentioned below are a whole new lifestyle. Drop in to any outlet and experience a test ride.

- Thunderbird
- Bullet 350
- Bullet Machismo 500
- Bullet Electra 5S

Royal Enfield's Bullet motorcycle had occupied a special place for the last five decades. The first Bullet rolled off the assembly line in 1956. The Royal Enfield brand is the oldest existing motorcycle brand in the world after it was found in 1901 in Britain. While the British company closed shop in 1967, the brand continues only in India. Eicher Group now owns the brand.

The company had a history of its own. In 1962, the plant began production of the 150cc fantabulous scooter, which was followed by the successful Sherpa; a small motorcycle developed indigenously using many parts from the Bullet. Following the Sherpa's success, the company introduced a 200cc two-stroke Mini Bullet.

Bullet's sheer power, unmatched and unparalleled stability, superior riding comfort and rugged good looks dominated the Indian roads. It became the dream choice of every motorcyclist in the country. The Indian Army and Police endorsed it.

Royal Enfield entered into a strategic alliance with the Eicher Group in 1990. Later the company merged with it in 1994. Eicher Group is one of the leading automotive groups in India with diversified interests in the manufacture of Tractors, Commercial Vehicles, Automotive Gears, Exports, Garments, Management Consultancy and Motorcycles.

In 1990, Royal Enfield introduced India's first 500cc bike- the Bullet 500 was followed three years later by the world's first production diesel motorcycle, the Taurus. The Eicher Group acquired Enfield India in 1994 and renamed it Royal Enfield Motors.

3.4.8 Escorts Limited

The firm is manufacturing various engineering product. In automobile sector its produces Motorcycle, scooters and Agricultural Tractors. The firms sold its motorcycles and scooters under the name "RAJDOOT" AND "YAMAHA". The firm began manufacture of scooters in 1969 and discontinued in 1979. The production of motorcycle was started in 1962. In 1960, the firm obtained technical and financial collaboration with M/S. CHKOP of Poland. In 1978, firm entered into technical collaboration with M/S. Yamaha of Japan for manufacture of 350cc motorcycles. In 1985, the firm entered into another collaboration agreement with Yamaha of Japan for manufacture of 100cc motorcycle. These motorcycles are marketed under the brand name "RX100".

3.4.9 LML Limited

Lohia Machines Limited (LML), is producing scooters since 1983. The firm entered into collaboration agreement and later financial collaboration with M/S. Piaggio & CSPA, Italy. The firm markets its product under the brand name "LML Vespa". The scooters are manufactured in the range of 100cc and 150cc. The technology of Piaggio supplied to LML is supposed to

be latest as compared to that supplied to M/S. Bajaj Auto Limited 39 years ago.

Now we will turn to discuss structure of passenger car firms which have made meaningful contribution in this segment.

3.5 STRUCTURE OF PASSENGER CAR

One of the most visible signs of entry of automobile MNCs into India is the huge of Multi-coloured cars seen on Indian roads. The fact is that the entry of MNCs into automobile industry has led to far reaching changes is both the manufacturing and marketing of automobile.

For five and half decades, the Indian passenger car manufacturers had enjoyed a protected market and the need to bring in updated technology did not arise. Indian customers had to alternative except to be satisfied with just a few models such as the Ambassador and the Fiat. It was a seller's market where the Indian customer had no other choice but to accept whatever was offered by these manufacturers. India was just a mute spectator to all these technology advancements, largely due to a well protected and monopolistic regime.

3.5.1 Maruti Udyog Ltd

A license and a Joint Venture agreement was signed between Government of India and Suzuki Motor Company (Now Suzuki Motor Corporation of Japan) in Oct 1982.

Maruti Udyog Limited (MUL), established in 1981, had a prime objective to meet the growing demand of a personal mode of transport, which is caused due to lack of efficient public transport system. The incorporation of the company was through an Act of Parliament

Suzuki Motor Company of Japan was chosen from seven other prospective partners worldwide. Suzuki was due not only to its undisputed leadership in small cars but also to commitments to actively bring to MUL contemporary technology and Japanese management practices (that had catapulted Japan over USA to the status of the top auto manufacturing country in the world).

December 1983 heralded a revolution in the Indian car industry. Maruti collaborated with Suzuki of Japan to produce the first affordable car for the average Indian. At this time, the Indian car market had stagnated at a volume of 30,000 to 40,000 cars for the decade ending 1983. This was from where Maruti took over.

With the advent of Maruti-Suzuki, Indian customers got a taste of modern technology, reliability and an awareness of international quality standards. The Indian Automobile industry which had never faced competition due to a policy of protected and closed economy was still slumbering and was slow to react. A limited number of manufacturers continued to provide old and outdated technology. However, as there was no other Indian manufacturer to match them in quality or quantity, Maruti became the predominant player in the Indian passenger car market.

In the small car segment it produces the Maruti 800 and the Zen, Alto and WagonR. The big car segment includes the Maruti Esteem and the Maruti 1000. It also manufactures the Maruti Omni. The latest addition to the Maruti stable is the Classic, billed as the car that will lead the way to the next millennium. Other models on their way include the Wagon R, the Baleno and Sx

Product and Brands

Maruti 800	Maruti Esteem	Maruti Zen
Maruti Zen Classic	Maruti Baleno	Maruti Wagon R
Maruti Omni	Maruti Versa	Maruti Swift
Maruti Gypsy	Grand Vitara	

Maruti Udyog Ltd. (MUL) is the first automobile company in the world to be honoured with an ISO 9000:2000 certificate. The company has a joint venture with Suzuki Motor Corporation of Japan. It is said that the company takes only 14 hours to make a car. Few of the popular models of MUL are Alto, Baleno, Swift, Wagon-R and Zen.

3.5.2 Hindustan Motors (HM)

Hindustan Motors (HM) is the flagship company of the C.K. Birla Group, established by Mr. B.M. Birla. Ambassador, Contessa and Mitsubishi Lancer are the most successful brands in the Indian market. In MUV segment the company has given Trekker, Porter and Pushpak. RTV is also one of the remarkable brand of HM.

Product and Brands

- Ambassador
- Mitsubishi Montero
- Mitsubishi Pajero
- Mitsubishi Cedia
- Mitsubishi Lancer

Hindustan Motors Limited (HML), was established by Mr. B.M. Birla of the industrious Birla family in 1942. It is the pioneering automobile manufacturing company and Flagship Company of the C.K. Birla Group. The company commenced its operations in a small assembly plant in Port Okha

near Gujarat. Later the manufacturing facilities moved to Uttarpara in West Bengal in 1948, where it began the production of - the Ambassador.

In addition to passenger cars (Ambassador, Contessa), Multi Utility Vehicles (Trekker, Porter, and Pushpak) and the RTV, the company also manufactures passenger cars in the mid size premium segment (Mitsubishi Lancer) and has brought in Sports Utility Vehicle (Mitsubishi Pajero) into the Indian market in collaboration with Mitsubishi Motors of Japan.

Contributing significantly for over five decades to the Indian Automotive industry, Hindustan Motors manufacturing facilities are situated in the states of Madhya Pradesh, Tamil Nadu and West Bengal. It functions with a commitment to core values such as quality, safety, and environmental care, in combination with customer-oriented total solutions.

3.5.3 Hyundai Motors

Hyundai Motor India Ltd. was established in 1996, and is a subsidiary of the giant South Korean multi national, the Hyundai Motor Company. It is Korea's top automobile manufacturer, with its sales revenue touching 8.24 billion in 1997. The Santro is steadily capturing the Indian market, and giving a strong competition to its rivals in the same segment. Its success story is an example of a profitable Indian - Korean partnership where Indian skills and workmanship combine with Korean design and technology to produce one of the best cars.

The Hyundai Santro has been designed and developed in India at the integrated auto-manufacturing unit at Irrungattukatoi near Chennai. This plant is capable of producing 1,20,000 cars and 1,30,000 engine and transmission systems annually. It also has in built facilities for the manufacture of critical components. It is planned to invest another \$1 billion in this facility by the year 2001.

Hyundai hopes to increase its presence in the Indian market with coming up with more new models to cater to the growing and differing needs of the market.

CARS

Hyundai Accent	Hyundai Elantra	Hyundai Getz
Hyundai Santro	Hyundai Sonata	Hyundai Terracan
Hyundai Tucson		

3.5.4 Honda Siel Cars

Honda Siel Cars India Ltd., (HSCI) was set up in December 1995 as a joint venture between Honda Motor Co. Ltd., Japan and Siel Limited to manufacture passenger cars in India. The company has brought about three models in India - Honda City, Honda Accord, and Honda CR-V. Its first model was launched in 1997. Very recently Honda Siel Cars has launched one more market friendly model, Honda Civic on 9th July 2006 in India. Honda Siel Cars India Ltd. is ISO 9002 & ISO 14001 certified.

Products and Brand

Model	Type
Accord	
<ul style="list-style-type: none"> • Accord VTi – L M/T • Accord VTi – L A/T • Accord V6 	Premium

City Zx**Premium**

- City ZX EXI
- City ZX GXI (CVT)
- City ZX VTEC

Honda Civic**Premium**

- Civic 1.8V MT
- Civic 1.8V AT
- Civic 1.8S MT
- Civic 1.8S AT

Honda CRV**SUV**

- Honda City CRV - Manual
- Honda City CRV - Automatic

Honda, a company which sells more than 50,000 cars in India in a year, the company has established itself as a leading brand in the metros with 51 Honda Exclusive Authorized Dealerships in 21 cities. It's 'City' model has revolutionized Indian passenger car market.

3.5.5 Daewoo Motors India Ltd.

Daewoo Motors is one of the successful auto makers in India. Originally incorporated to manufacture light commercial vehicles, the company has also given good cars to Indian roads. Cielo, Matiz and Nexia are few of the models in the mid-size and small car segment made by the company. The company was set up in March 1967 in Korea.

Product and Brands

- Cielo
- Matiz
- Nexia

Daewoo Motors India Ltd. (DMIL) was incorporated in India as DCM Toyota Ltd. in the mid-80s. The company was set up to manufacture Light Commercial Vehicles (LCVs) in the country. In Financial Year 1995, Korea's Daewoo Corporation bought over DCM Toyota's equity and increased its holdings to over 90 per cent by Financial Year 1997.

In July 1995, DMIL launched Daewoo's 1500cc Cielo. The car did get a good recognition and its sales decelerated since the financial Year 1997. Since then it had slowdown in the mid-size car segment. Next, Daewoo launched Matiz in the small car segment and Nexia a mid -size car segment.

3.5.6 Fiat India Private Limited

Fiat India is a Fiat Auto Spa group of Italy, giving world class cars to India. The group has an experience in motor vehicle sector for over one hundred years. 'Uno' of Fiat Spa is Europe's favorite car for the last two decades. Palio, Petra and Adventure are the famous brands of Fiat India.

Product and Brands

- Adventure 1.6 Sport
- Fiat Grande Punto
- Palio 1.6 Sport
- Palio 1.2 NV Petro
- Palio Diesel
- Petra Petrol
- Petra Diesel

Fiat Auto produces and sells automobiles under the Fiat, Alfa Romeo and Lancia brands and light commercial vehicles (LCV) under the Fiat brand. The Group also controls Maserati and Ferrari, the producer of luxury sports cars that excel for their exclusive characteristics, technology and performance.

In India, Fiat is wholly managed by Fiat Auto Spa of Italy. Here the company owns the brands Fiat, Alfa Romeo & Lancia. Fiat India is investing heavily in the country.

3.5.7 Ford India Limited

Ford India, originally an American company entered the Indian market with Ford Escort in the year 1988. The 2001 model Ford Ikon was a successful car on Indian roads. The company added more happening brands to the market, such as Ford Fusion, Ford Fiesta, Ford Mondeo and Ford Endeavour.

Product and Brands

- Endeavour
- Fiesta
- Focus
- Fusion
- Ikon
- Mondeo

Ford Motor Company, an American company, manufactures and sells automobiles worldwide. The company was launched from a converted wagon factory with Rs. 28,000 cash from twelve investors. Henry Ford, the founder, was 40 years old when the company was founded. Today, it is the largest family-controlled company in the world. It has been in continuous family control for over 100 years.

Ford introduced itself in India in 1988 with its Ford Escort model. Later in 2001 it was replaced by locally produced Ford Ikon. Since then it has added Fusion, Fiesta, Mondeo and Endeavour to its product line.

3.5.8 General Motors India Pvt. Ltd.

General Motors (GM) is global leader as automaker with manufacturing facilities in 33 countries. It entered the Indian market as a 50-50 joint venture with the C.K. Birla Group but later became a fully owned subsidiary of its parent company. Chevrolet Optra and Chevrolet Tavera (MUV) are the most happening cars of the company in India.

Product and Brands

- AVEO
- AVEO UVA
- CAPTIVA
- OPTRA MGNUM
- SRV
- SPARK
- TAVERA

3.5.9 Tata Motors Ltd

TELCO is India's largest private sector company with an annual turnover of Rs. 101.3 billion. It is also India's largest commercial vehicle manufacturer with a market share of 31.2% in the multi-utility vehicles segment and 6.4% in the luxury car segment. It is the 2nd largest passenger car manufacturer. It is the 5th largest medium and heavy commercial vehicle manufacturer in the world. The popular brands of the company are Tata Indica, Tata Indigo, Tata Sumo and Tata Safari.

Worldwide it is ranked among the top ten in the manufacture of vehicles in the range of 5-15 tonnes. It manufactures heavy commercial vehicles (HCV), light commercial vehicles (LCV), passenger cars and multi-utility vehicles.

One of India's premier automobile companies, it was established in 1945 to manufacture steam locomotives. A tie-up with Daimler-Benz to

produce commercial vehicles lasted from 1954 to 1969, by when Telco was in a position to independently design and manufacture commercial vehicles. It ventured into the production of other engineering equipment before it finally settled down to automobile and construction equipment machinery.

Tata has entered into several collaborations with different companies. Tata Cummins Ltd. is a 50:50 venture with Cummins Engine Company, USA for the manufacture of fuel-efficient, low emission, environment-friendly diesel engines. A joint venture with Daimler Benz/ Mercedes Benz A.G. produces the 'E-Class' Mercedes Passenger Cars and it is also in collaboration with Holset Engineering Company, U.K. for turbo chargers to be used in the diesel engines manufactured by Tata Cummins Ltd. and other OEMs.

The only Indian company which is equipped with crash testing facilities, servicing is never a problem with its vehicles. Service set-ups exist at every 100 kms at national highways. Besides there are 450 Service Centers across India, 24 hour ATM (Any Time Mobile) centers in Mumbai and Ahmedabad and fully functional Customer Training Cells in the Service Centers to help the customers make the best use of their vehicles.

Telco manufactures some of the most favorite vehicles of all times. Its Tata Safari, Tata Estate, Tata Mobile, Tata Sierra, and the trucks and buses manufactured by it are very popular. The challenge before Telco now is to make its newly introduced passenger car 'Indica', as popular as its other models.

Tata Motors Ltd.

Tata Motors is India's largest automobile company. It is the largest commercial vehicle manufacturer in India and 2nd largest

passenger car manufacturer. It is the 5th largest medium and heavy commercial vehicle manufacturer in the world. The popular brands of the company are Tata Indica, Tata Indigo, Tata Sumo and Tata Safari.

Products & Brands

PRODUCTS	BRANDS		
Passenger Cars	Indica V2	Indigo	Indigo Marina
	Indigo SX	Indica V2 Turbo	Indica V2 Xeta
Utility Vehicles	Safari Dicor	Sumo	
Trucks	All types of Medium & Heavy Commercial Vehicles		
Buses	Starbus	Globus	SFC 407 Turbo Mini- bus
	LP 407 Turbo Mini- bus	LP 709 E Turbo Bus	LPO 1510 CGS bus (CNG bus)
	LP / LPO 1510	LP / LPO 1512 TC Turbo Bus	LP / LPO 1512 TC Turbo Bus
	LPO 1610 TC RE Semi Low Floor Bharat Stage - II Bus	LPO 1616 TC Luxury Bharat Stage - II Bus	LP 1109 Bharat Stage II
Defence	Tata 407 (4 x 4) Soft Top Troop Carrier	Tata 407 / (4 x2) Hard Top Troop Carrier	Tata LPTA 713 TC (4 x4)
	Tata LPT 709 E Hard Top Troop Carrier	Tata SD 1015 TC (4 x4)	Tata LPTA 1615 TC (4 x 4)
	Tata LPTA 1621 TC (6 x6)	Tata LPTA 1615 TC (4 x2)	

Tata Motors Limited is the largest automobile company in India with revenues touching to Rs. 20,483 crores (USD 4.7 billion) in the financial year

2004-05. It leads the market in commercial vehicles in each segment and is the second largest in the passenger vehicles segment. Globally, Tata Motors stands fifth in the medium and heavy commercial vehicle manufacturer category. Now we will move to structure of Commercial vehicles.

3.6 STRUCTURE OF COMMERCIAL VEHICLES

3.6.1 Ashok Leyland

Ashok Leyland, the Hinduja Group flagship in India, is the second largest player in the Indian commercial vehicle market with a market share of 27%. The Company's main activity is to manufacture commercial vehicles and spare parts. The Company also specializes in manufacturing special purpose vehicles and engines for industrial, genset, marine requirements and other automobile spare parts.

A year after India's independence, in 1948, industrialist Raghunandan Saran founded Ashok Motors in Chennai, for the assembly of Austin cars. In 1955, British Leyland picked up an equity stake and the company's name was changed to Ashok Leyland. The company started manufacturing commercial vehicles in the same year. In 1987, the Hinduja Group and Iveco, the commercial vehicles arm of Fiat of Italy, gained a controlling stake in Ashok Leyland.

The company became the first Indian automobile company to receive ISO 9002 certification in 1993. The more comprehensive ISO 9001 certification came in 1994 and QS 9000 in 1998. All the Ashok Leyland vehicle manufacturing units received the ISO 14001 certification in 2002.

Served by its own comprehensive R&D base, complemented by collaborations with global technology leaders, Ashok Leyland has established a tradition of technological leadership and a strong reputation for product reliability. Ashok Leyland has technological collaborations with Hinō Motors and the ZF Group.

The company's product range includes: Eighteen to 82-seater single and double decker buses, Vestibule buses, Haulage vehicles in capacities ranging from 7.5 to 49 tonnes, Diesel engines for industrial, marine and genset applications.

The Company can produce 77,000 vehicles and 87,000 engines annually from its six manufacturing locations at Chennai, Hosur (three plants), Alwar and Bhandara. Gross turnover of Ashok Leyland in 2005-06 crosses Rs.60 billion - a 25.8% growth over the 2004-05 turnover of Rs 48,108.01 million. Net profit rose 20.6% at Rs 3,273.20 million (Rs 2,714.10 million).

The Company's total sales volume reached 61,655 vehicles (54,740 vehicles) during 2005-06, a rise of 12.6%. In its main domain of M&HCV, it posted a 17.6% growth in the domestic market, whereas the total industry volume grew at 4.5%. International Operations have contributed 4,879 nos.

Ashok Leyland, a brand which reminds that 70 million passenger's travel on its buses in a day. A brand which claims that eight out of ten metro state transport busses in India are from the same company. The company manufactures a wide range of products; from 18 seater to 82 seater double decker buses, from 7.5 tonne to 49 tonne in haulage vehicles, from numerous special application vehicles to diesel engines for industrial, marine and genset applications.

Products and Brands

- Buses
- Trucks
- Defence & Special Vehicles
- Engines

3.6.2 Volvo

Volvo is one of the leading heavy commercial vehicles manufacturer in the world. The trucks of Volvo are sold in more than 130 countries. Volvo Truck Corporation is the third largest heavy-duty truck manufacturer in the world. Apart from trucks, the company makes city buses, intercity buses and coaches.

Product and Brands

Trucks

- Volvo FM9 tippers
- New Volvo FM
- New Volvo FH
- Volvo s80
- Volvo xc90

Volvo, founded in the year 1927 is one of the leading manufacturers of heavy commercial vehicles and diesel engines in the world. It offers a comprehensive range of customized solutions in financing, leasing, insurance and service along with complete transport systems for urban traffic.

Today, Volvo trucks are sold and served in over 130 countries globally through its 650+ dealerships and 1,450 workshops. Over 90 per cent of the trucks are build in the heavy-weight class, over 16 tons, which makes Volvo Truck Corporation the third largest heavy-duty truck manufacturer in the world. The company has 9 assembly plants around the world and eight factories owned by local partners.

The company employs about 81,000 employees and has production unit in 25 countries. They operate in more than 185 markets

3.7 STRUCTURE OF MULTI UTILITY VEHICLES

3.7.1 Mahindra & Mahindra Ltd.

Mahindra & Mahindra is a part of the Mahindra Group and was established in 1945 to manufacture general-purpose utility vehicles. It later moved into manufacturing tractors and light commercial vehicles, and is today the tenth largest private sector company in India.

- Having increased the scope of work, the company's business is divided into four divisions viz. automotive, tractor, inter trade and MSL. These divisions handle steel, trading and manufacturing of ash handling plants and travelling water screens.

The company has rapidly expanded itself and today has seven state-of-the-art factories and 33 sales offices supported by a network of more than 500 dealers throughout the country. The company employs over 17,000 technical and non - technical personnel and is situated on an area of over 5,00,000 square meters.

With an experience of over 52 years in extensive manufacturing and engineering development, it has a strong technological base, and is supported by a team of experienced personnel.

The onset of 1994 saw the company branch itself in the field of business process re - engineering at its manufacturing locations. Its product development centers are located at Kandivili and Nasik. There already are plans to move this center to a new and more spacious site with more facilities, in a conducive environment.

Product and Brand

Automotive Segment		
Bolero Range	Bolero	Bolero Camper
Pickup Range	<ul style="list-style-type: none"> • Utility • Pick-Up 	<ul style="list-style-type: none"> • NC 640DP • Pick-Up CBC
MaXX Range	MaXX	MaXX-LX
CL Range	500-550MDI	
MMRange	<ul style="list-style-type: none"> • 540/550 DP 540/550 XDB	<ul style="list-style-type: none"> • 550 PE
Commander Range	<ul style="list-style-type: none"> • 650 DI • 750 ST 	750 DI Long
Hard Top Range	<ul style="list-style-type: none"> • Economy • Marshall DI • 775 XDB • 3 Door 	<ul style="list-style-type: none"> • 5 Door • Marshall Deluxe • Marshall Royale
Voyager Range	<ul style="list-style-type: none"> • Voyager Voyager Delivery Van	Voyager Ambulance
LCV Range	<ul style="list-style-type: none"> • CabKing 576 • FJ470-DS4 High Roof Omnibus • DI 3200 • FJ Minibus 	<ul style="list-style-type: none"> • Tourister • Cabking 576DI • Loading DI
Three Wheeler Range	Champion DX	Champion
Alternative Fuel Range	<ul style="list-style-type: none"> • CNG • Bijlee 	FJ CNG Minibus
Army Range	Rakshak	550 XD
Export Range	<ul style="list-style-type: none"> • Single Cab • Double Cab • 4WD 	<ul style="list-style-type: none"> • MM-775 • Classic

Mahindra & Mahindra Limited (M&M), the flagship company of US \$ 2.59 billion Mahindra Group, has a significant presence in key sectors of the Indian economy. M&M is one of the most respected companies in India. The Company over the years has transformed itself into a Group that caters to the Indian as well as foreign markets with a presence in vehicles, farm equipment, information technology, trade and finance related services, and infrastructure development. The company has 49 sales offices that are supported by a network of over 780 dealers across the country. The company's outstanding manufacturing and engineering skills allow it to innovate and launch new products constantly for the Indian market. The "Scorpio", a SUV developed by the company from the ground up, resulted in the Company winning the National Award for outstanding in-house research and development from the Department of Science and Industry of the Government in the year 2003.

3.7.2 Toyota Kirloskar Motor Ltd.

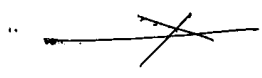
Toyota Kirloskar Motor is a joint venture between Toyota Motor Corporation of Japan and Kirloskar Group of India. Toyota Motor holds 89% equity of the company. Camry, Corolla, Prado and Innova are the successful cars of Toyota on Indian roads. It was established in October 1997

Product and Brands

- Camry
- Corolla
- Prado
- Innova

Toyota is one of the biggest vehicle manufacturers in the world and is widely known. The company started by inventing the first power loom in Japan at the end of the nineteenth century and revolutionized the textile industry of the country. In 1918, Toyoda Spinning and Weaving Company was established by Sakichi Toyoda and his son Kiichiro Toyoda. Sakichi fulfilled his lifelong dream by creating an automatic loom in 1924. Toyoda Automatic Loom Works followed in 1926. In the 1920, Kiichiro introduced

himself in the automotive industry. He laid the foundation of Toyota Motor Corporation that was established in 1937. Toyota Motor Corporation has launched with a joint venture with Kirloskar Group as Toyota Kirloskar Motor Ltd. (TKM).



There is no doubt that Indian manufacturers are globally competitive in terms of quality, features and technology at least in the low-price range of scooter and motor-cycles. There is also another new development: customers are increasingly changing their vehicles in shorter periods of time, thanks to easy availability of loans and financing. There is increasing emphasis on quality and durability since resale value will directly or indirectly begin to play a larger role in purchase decision.

Experts forecast 10 to 15 per cent annual growth for two-wheelers during the next three to four years. At present, with annual sales of 6 million units, the Indian two-wheeler market is the second largest in the world after China (which has annual sales of 12.5 million).

3.8 INVESTMENT DRIVE

It is well recognized that India is an attractive destination for global auto giants like BMW, General Motors, Ford and Hyundai who were setting base in India, despite the absence of specific trade agreements.

The economy of India is emerging. The following table shows the ranking of India in the past four years.

Rank	2005	2004	2003	2002
1	China	China	China	China
2	India	Thailand	Thailand	Thailand
3	Thailand	India	USA	USA
4	Vietnam	Vietnam	Vietnam	Indonesia
5	USA	USA	India	Vietnam
6	Russia	Russia	Indonesia	India
7	Korea	Indonesia	Korea	Korea

India's has changed very fast. Due to economic growth of India, major auto players are investing in India. In 2005, India ranks second and if this trend continues, India will get first rank among the advanced countries of the world within couple of years.

3.9 IMPLICATION FOR THE AUTOMOBILE INDUSTRY IN INDIA

The automobile industry in India is on an investment overdrive. Be it passenger car or two-wheeler manufacturers, commercial vehicle makers or three-wheeler companies – everyone appears to be in a scramble to hike production capacities. The country is expected to witness over Rs. 30,000 crore of investment by 2010.

Over the next one year, some 20 new cars will be seen on Indian roads. Take note of this, Maruti Udyog has come up with new Zen and the diesel version of Swift. Hyundai will also be unmasking the Verna and a brand new diesel car. General Motors will be launching a mini and may be a compact car.

Most of the companies have made their intentions clear. Maruti Udyog has set up the second car plant with a manufacturing capacity fo 2.5 lakh units per annum for an investment of Rs. 6,500 crore (Rs. 3,200 crore for diesel engines and Rs. 2,718 crore for eth car plant itself). Hyundai and Tata Motors have announced plans for investing a similar amount over the next 3 years. Hyundai will bring in more than Rs. 3,800 crore to India; Tata Motors will be investing Rs. 2,000 crore in its small car project.

General Motors will be investing Rs. 100 crore, Ford about Rs. 350 crore and Toyota announced modest expansion plans even as Honda Siel has earmarked Rs. 3,000 crore over the next decade for India – a sizeable chunk of this should come by 2010 since the company is also looking to enter the lucrative small car segment.

It will be significant to consider the contribution of different models manufactured by the leading automobile firms so far as the automobile industry is concerned. The brands and models produced by the automobile firms are mentioned as below.

Brand and Model of Small Car

This table clearly shows number of models in each brand of MUL.

Name of the Firm	No. of Models	Name of the Brand
Maruti Udyog Ltd.	06	800
Maruti Udyog Ltd.	04	Wagon R
Maruti Udyog Ltd.	03	Alto
Maruti Udyog Ltd.	05	New Zen
Maruti Udyog Ltd.	01	Swift
Reva Electrica	02	Reva
Fiat India Auto Ltd.	03	Palio
Tata Motors Ltd.	06	Indica V2
Hyundai Motors Ltd.	05	Santro Xing
Hyundai Motors Ltd.	01	Getz
General Motors Ltd.	02	Corsa Sail

Brand and Model of Mid-segment Car

Mid Segment Cars			Premium & Large Cars		
Name of the firm	No. of Models	Name of Model	Name of the firm	No. of Models	Name of Model
Maruti Udyog Ltd	6	Esteem	Ford India	2	Mondeo
Ford India Ltd.	5	Ikon	Hyundai Motor L.	5	Elantra
Tata Motors Ltd.	3	Indigo	Hyundai Motor L.	3	Sonata
Fiat India Ltd.	5	Petra	Toyota Kirloskar	5	Corolla
Hyundai Motor L.	7	Accent, Tornado, Viva	Toyota Kirloskar	2	Camry
Hindustan Motors	5	Ambassador	Maruti Udyog Ltd.	4	Baleno
General Motors Ltd	4	Opel Corsa	Hindustan Motors	6	Lancer
Honda Siel Ltd.	3	New City	General Motors L.	3	Optra
			General Motors L.	1	Opel Vectra
			Honda Siel Ltd.	4	Accord
			Skoda	5	Octavio
			Skoda	1	Superb

Brand and Model of Premium & Large Cars

Premium & Large Cars			Utility, Sports & Multi-Utility		
Name of the firm	No. of Models	Name of Model	Name of the firm	No. of Models	Name of Model
Daimler Chrysler	03	New E-class	Ford India	02	Endeavour
Daimler Chrysler	01	S-Class	Hindustan Motors	03	Pajero
Daimler Chrysler	04	C-Class	Tata Motors Ltd.	05	Sumo
Porsche	02	911	Tata Motors Ltd.	07	Safari
			Tata Motors Ltd.	02	New Safari Dicor
Wagons			General Motors L.	04	Tavera
General Motors L.	02	Opel Swing	Bajaj Tempo	01	Gama
Tata Motors Ltd.	02	Indigo Marina	Bajaj Tempo	01	Judo
Fiat Ind. Auto Ltd	01	Adventure Sport	Bajaj Tempo	01	Trax
Skoda	02	Combi	Bajaj Tempo	01	Traveller
Hyundai Motors L.	01	Tucson	General Motors L.	01	Forester
Brand & Model of Sports & multi utility vehicles			Hindustan Motors	01	RTV
Daimler Chrysler	01	New H-class	Honda Motors L.	02	CR-V
Mahindra & Mahi	02	CL550 MDIst	Maruti Udyog Ltd.	01	V1-tara XL7
Mahindra & Mahi	02	CDR 750	Maruti Udyog Ltd.	03	Omni
Mahindra & Mahi	02	Marshall	Maruti Udyog Ltd.	02	Gypsy King
Mahindra & Mahi	05	Scorpio	Maruti Udyog Ltd.	04	Versa
Mahindra & Mahi	09	BAIeno	Hyundai Motors L.	02	Terraca 4
Mahindra & Mahi	02	MM 550 DP	Toyota Kirloskar	02	Innova
Mahindra & Mahi	02	CDR 640 ST	Toyota Kirloskar	02	Prado
			Porsche	01	Cayenne
			Nissan	01	X-Trant

Brand and Model of Two-Wheelers

Name of the Firm	Product	No. of Models
Bajaj Auto	Motorcycle	13
Yamaha	Motorcycle	08
HMSI	Motorcycle	01
Hero Honda	Motorcycle	21
Royal Enfield	Motorcycle	09
TVS	Motorcycle	09
LML	Motorcycle	08
Kinetic Engg.	Motorcycle	10
	Scooters	
Bajaj Auto	Scooters	03
Kinetic Motors	Scooters	04
LML	Scooters	04
Honda	Scooters	03
TVS	Scooters	05

Source: Auto India: May 2006.

The study shows that firm which offers several model of vehicle in the segment of two and four-wheelers at low prices has achieved higher growth rate as compared to those firms who offer less choice to buyers. This is the reason MUL is dominating in the segment of passenger while Hero Honda is maintain about 50 percent market share in the segment of motorcycle. It can be concluded from the above that the automobile firm which invest more in the products which are demanded by the customers. Such firms get higher growth. The customers get an opportunity to buy the products when they are in different colours, different models with power window, power steering and wiper at the rear part of car. Earlier cars used to be only in white colour and the people had no choice.

Chapter - IV

Technological Innovation and Growth of Automobile Industry

Chapter – IV

TECHNOLOGICAL INNOVATION AND GROWTH OF AUTOMOBILE INDUSTRY

Technological innovation plays a significant role in determining the size and growth of the automobile industry in India. Indian automobile industry has been emerging as a sunrise sector of the economy. It is not only meeting the growing domestic demands, but also gradually increasing its penetration in the international markets. It has been continuously restructuring itself and absorbing newer technologies in order to align itself to the global developments and realize its potentialities. This has instilled confidence in auto manufacturers to face international competition as well as improve quality standards of vehicles with safety norms in the wake of rapidly increasing traffic. Various policy incentives including time bound implementation of Automobile Mission Plan together with establishment of world class testing, homologation and certification facilities would ensure Indian automobile industry a distinct edge amongst the newly emerging automotive destinations of the world.

In this Chapter, attempts have been ventured to trace out the evolution and role of technological innovation in analyzing the size and growth of the automobile firms. The new economic policy of the government in early 1980's and 1990's attracted the entry of foreign players in the segments of two and four wheeler in India. This was the starting point of the use of foreign technology which, of course, has changed the outlook of Indian automobile industry. Technological innovation also helps the automobile firms in diversifying their products. Therefore, we will also take into consideration the concept of diversification which is a key factor to growth.

The Automobile industry in our country has a very vital role to play in the economic progress of our country by bringing a valuable revenue in the

treasury of our Nation and also by increasing the job opportunities and thus helping for solving the employment problem of our nation, to the great extent.

4.1 TECHNOLOGICAL INNOVATION IN AUTOMOBILE INDUSTRY

Since the introduction of the bicycle, the basic configuration of any two wheelers has not undergone major changes. The bicycle continues to have the frame in the centre with rigidly fixed wheels at front and rear and crank transmitting the muscular power to the rear wheel through a pair of sprockets and chain. Similarly, the powered two wheeler has a power track attached to the frame and transmitting the power to the rear wheel through a pair of sprockets and chain or a pair of pulleys and a belt. In some cases, the engine is on the wheel itself thereby eliminating a flexible drive system. However, the total outlook of the two-wheeler and four-wheeler itself has undergone remarkable changes especially in the recent past mainly due to fantastic progress made in the manufacturing technology coupled with the development of new materials.

The technological development of the various systems and major components of automobiles of modern days has made the automobile firms possible in introducing vehicles in different shapes and models that suit to the society and people. Improvements have been made not merely in external design and shape of vehicles, but also in the engines supplying power to them such as self starters, automatic drive systems, comfortable seats, soft springing shock absorbers, safety features, hydraulic break systems, energy-absorbing steering columns; automatic electric and electronic devices have been introduced as a result of industrial research. This has always attracted the new buyers and old buyers to buy a new one. Most notable of these innovations, of course, was the idea of an inexpensive yet reliable car that a good percentage of people can afford. This has created more demand for cars in the automobile

market. Several other factors came along and these were the self-starters, body styling, demountable rims, and electric lights.

It is believed that in-house technological capabilities are ideal. The product can be tailor-made specifically for India and the cost of designing can be kept low. More important, the product cost can also be low if the company uses components already available in India. Unfortunately very few Indian companies have the ability to design in-house. Amongst four-wheeler manufacturers, only Telco, Bajaj Tempo and to a limited extent, Mahindra & Mahindra, have somewhat independent design capabilities. This approach reduces the cost of production. In the case of Two-wheeler makers, TVS-Suzuki, Bajaj Auto and Kinetic Engineering have capabilities of designing their products in-house

The Technology used mostly in two and four-wheelers was based on Italy in India until early 1980's. This did not contribute the growth of automobile firms based on Italy for longer time. With liberalization of economic policy, Japanese technology proved to be more superior to Italian technology. As a result, Japanese firms entered as collaborator with Indian automobile firms in the segment of two and four-wheelers which changed the outlook of Indian automobile industry after 1990'. The latest model from Honda, Maruti, General Motors, with power steering, power windows, digital panels and the latest electronic gizmos that make a car look the inside of an aircraft's cockpit.

4.2 HOW THE SUZUKI EVOLVED TECHNOLOGY

Suzuki Motor Corp. changed the automobile industry in India. Suzuki came to India in the early 1980s. Before Suzuki coming here, India manufactured only three types of vehicles. One was the Ambassador, another was the Fiat 1100, a small car, and the third was the Standard Herald. The technology in these vehicles is very old. And the design is very old, from the

1960s. There was no any market competition; we just had these three companies. In the 1980s, a small window of opportunity for new investments appeared, and Japan was the first country to take advantage of it. Many Japanese vehicle manufacturers entered India at that time. Only one of those manufacturers made passenger cars -that was the Maruti* in 1982-83. The other companies manufactured light commercial vehicles. We had Nissan, Toyota and Mazda. First the manufacturers of light commercial vehicles came, and then came the motorcycle manufacturers - Yamaha, Honda and Kawasaki. So when talking about that period of two or three years, we are talking about the period in which the Indian automobile industry was Japanese.

All of a sudden, with the arrival of so many economy models, the Fiat took a beating and turned into an absolutely down market automobile. People started selling their Fiats for as low as Rs.10, 000 and it came to seen as a transition vehicle for middle class people who would eventually want to graduate to something better. Driving an old Fiat was also considered to be too low on the social status scale. Automobile industry in India is about a century old but the last 50 years have gone with developing basic engineering and technological upgradation.

Japanese cars became very popular in India. The product from Japan was, of course, a really important part of the whole thing because it brought in new technology and new designs. It changed the way we looked at the automotive industry altogether. And it was Suzuki that ushered in the revolution in the north. It gave rise to a lot of small-scale ancillary operations. Those small-scale ancillary operations arose only because of Maruti. Many of these units formed joint ventures with Japanese companies, as well as collaborations or technology transfers, because Suzuki supported them. In the case of about ten or twelve companies, Suzuki itself took half of the shares, so it was a joint venture between Suzuki and the component manufacturer. So a whole lot of ancillary development started, and component manufacturing got a real boost in the northern part of India.

What kind of revolution did Japan introduce? One aspect was the new technology, and another was the volume. When Maruti was established, the fiercest debate in government circles, as Maruti was a government-owned company, concerned the car production capacity, and whether the volume of 40,000 units was too high for the country. Nobody imagined at that time that, after another 20 years, Maruti might be making something like 600,000 or 700,000 vehicles.

4.3 THE TECHNOLOGY PROCESS: HOW INNOVATION OCCURS

In this section, an attempt has made to study focusing on the use of modern technology used in the automobiles. New engineering ideas are developed and incorporated in automobiles in two ways. In the overall planning of a new vehicle, prototype systems and technologies are fitted into harmonized with the total vehicle package, which itself may be either traditional or radically different. This is the work of the designers and engineers in the first-assembler firms, who continuously scan the “Shelf” of available technologies-within the firms, across the supplier industry and other sectors – for new ways to perform old functions as way to give automobile new capabilities. The placement of new component technologies on the staff results from the research and develop most of the process of conceiving new concepts and bringing them up to proven prototype status. This is after the work of technologists in supplier companies who develop new components and then convenience vehicle designers to use them. In the case of long term development of radical technologies, this task way also requires government support. Technological development has played a crucial role in the growth of automobile industry in India. The automobile world has never lacked of “bright ideas”, the concept of electric cars, turbine cars, steam cars, and even flying cars have been around for many years.

(The earlier cars had their own identity and styling and this continued till the late seventies after which aerodynamics and streamlined bodies to achieve a lower coefficient of drag turn over for better fuel economy Refinement took place during 1980's and car manufacturers worldwide started research for making the automobile more efficient and refining metallurgy for better durability of the engine.) Gearbox and differential technologies had already been perfected the world over in which the synchromesh was added to the-gears, even to the first gear, for smooth gearshift. This technology was unknown to the Indian till the mid-eighties when the Japanese, with the advent of Maruti Suzuki, finally brought it.

Unfortunately, due to restricted control system, Indians were made to live with the age-old system of carburetor filled automobiles and absolute and inefficient engines till Maruti arrived on the Indian road. With the relaxations in licensing and regulatory system in India, Maruti brought new technology to the doorsteps of the Indian populace. The first and the foremost were the engine technology and the associated durability. Early Indian automobiles like the Ambassador and the fiat would need an engine rebuild within the first 40,000 – 50,000 km or would basely do one summer with the load of the air-conditioner. Nobody bothered to get in the latest engine technology, the bodies would outline the engine manifold, Today, the entire scenario has changed and the latest technology and the engines live as long as the bodies if not longer and do not require rebuilding for at least 2-3 lakh km. run.

The quest for better fuel efficiency was taken further into the next era with the introduction of the computerized fuel injection system. This development came as a blessing to the living norms of the planet as the fuel injection systems actually aided in reducing pollution levels while the vehicle population continued to rise.

Considering the change brought about in technology levels, it is imperative to note the changes in the distribution systems. Indian buyers had

long waiting periods to get delivery of vehicles, which in most cases had to be driven down from the factory by drivers hired by owners in the absence of safe transportation facilities. Waiting periods meant shortages and this led to black-market practices. Indians were made to survive under the protectionist regime which encouraged local industries.

It was never realized that the country had so much potential as may be seen from the fact that Indians are now buying around 6 lakh cars a year as against 1-1.25 lakh vehicles 17 years ago. The mother of this sectoral revolution was Maruti which gave the impetus for the transformation of the Indian automobile industry. Not only the joint venture with Suzuki of Japan brought about great mobility for Indians but ushered in new systems of automated assembly line manufacturing. The economy saw a rising contribution from the automobile industry ever since Maruti began its operations. Direct and indirect employment in the automotive and ancillary industries brought more focus on this sector.

Even though the revolution was brought about by Maruti-Suzuki the other major auto manufacturers of the world, who had hitherto considered India as a backward country, came to terms with its booming economy and understood the might of the Indian middle class. The disposable income of the booming middle class was a vital indicator of the demand side of the goods. Major auto manufacturers saw their future in the growing Asian economics, and started making plans.

Global auto companies started running test on imported vehicles in India for engineering evolutions on the engines suspensions, body structures and the like. All these enabled the companies to see huge potential in the growing Indian economy. The wait list for Maruti Products and the ever-increasing demands were taken as the lifetime parameters of the Indian auto industry and all global manufacturers were impressed by the steady northward movement of this blip on the screen! After a decade of Maruti's launch in

India, the first of the global players – General Motors, Daewoo Motor of South Korea and Ford Motor company – announced their plans to enter India. For GM and Ford, it was a kind of re-entry in the form of manufacturing after almost for four decades. This was an enthusiastic show of confidence in the Indian auto Market.

The announcements by the top two global auto giants were followed by the entry of other global players like Honda, Mercedes, Santro etc.

Dr. Manmohan Singh, the former Finance minister of India, simplified the investment norms for foreign companies in the form of single window clearances that saw the gears of this mammoth industry rolling.

The industry expanded and so the demand for vehicles. Many players came in, some could understand the rules of the game and are still around standing tall and playing strong but some like Peugeot, for whatever reasons, could not sustain and called it a day. The Global manufacturers started turning vehicles for Indian conditions and then came that day to rejoice in the glory of this new revolution. India started exporting vehicles to other Asian, European and African countries. With this, the Indian auto industry saw the completion of one full circle from being a net importer of vehicles to exporter of vehicles made in India.

The technological development of the various systems and major components of automobiles of modern days have made the automobile firms possible in introducing vehicles in different shapes and models that sent to the society and people. Improvements have been made not merely in external design and shape of the vehicles, but also in the engines supplying power to them. Self starters, automatic drive systems, comfortable seats, soft springing shock absorbers, safety features, hydraulic break systems, energy-absorbing steering columns, automatic electric and electronic devices have been introduced as a result of industrial research. This has always attracted the new

buyers and old buyers to buy a new one. Most notable of these innovations, of course, were the idea of an inexpensive yet reliable car that a good percentage of people can afford. This has created more demand for cars in the automobile market.

Several other factors came along and these were the self-starters, body styling, demountable rims, and electric lights.

4.4 ROLE OF TECHNOLOGY UNDER NEW ECONOMIC POLICY

With the opening up of the market and the competition, product innovation and new products have become imperative for survival and growth of the automobile firms the Indian automobile industry's history has undergone technological changes resulting in competition among automakers.

Upgradation and improvement in production technology can be generated internally, and Japanese-style suggestion schemes have worked quite well in the Indian context. A case in point is the TVS-Suzuki plan, where Japanese collaborations learnt quite a lot from the Indian experience. Given that Indian automobiles can be price competitive, production technology is less of a priority area.

It is in design technology that the Indian manufacturers were far behind till 1980s, which of course, had restricted the size and growth of the automobile for the firms have a limited choice. The year 1995 onwards experienced changes in design technology which made the Indian automakers, possible to produce the products in different design, colour, shape and models. The consumers got the advantage of choosing the design resulted in more demand of a particular design of vehicle resulting in the growth of such automobile firms.

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4.5 TECHNOLOGY USED IN MOTORCYCLE

4.5.1 100 & 125 CC Bikes

For the past two decades, the customers were using 100 cc bikes. The first bike to enter India was the 100 cc Ind-Suzuki bike, followed by Hero-Honda CD 100, Kawasaki Bajaj KB 100 and Yamaha RX 100. The premium category was introduced in 2000 and we saw 150 cc rolling out of factories. These two categories were entirely different. People started looking out for something which had both economy and power. This gave birth to a new category right in the middle of the two i.e. the 125 cc. Demand for this new deluxe commuter category is on the rise, as the 125 cc(s) provide the advantage of power for that extra adrenaline rush which a young biker needs at time. Bajaj also produced Pulsar 150 cc and 180 cc. Now it has come out with Pulsar deluxe 200 cc. Fuel economy is considerably better than 150 cc bikes and they are cheaper to buy as well. TVS brought out the victor GV – a 110 cc version – which was quite popular with the masses but still, there was a need to fill the 125 cc slots. The GX was modified to the GLX 125 and then finally a little tweaking gave birth to a new avatar with added frills like alloy wheels, gas filled shock absorbers, etc. Another technological development was introduced in the two-wheeler is the disc break which helps the biker to control the high speed. Another technological development was introduced in

the two-wheeler is the disc break which helps the biker to control the high speed.

4.5.2 Disc Break

TVS brought out the victor GV – a 110 cc version – which was quite popular with the masses but still, there was a need to fill the 125 cc slots. The GX was modified to the GLX 125 and then finally a little tweaking gave birth to a new avatar with added perks like alloy wheels, gas filled shock absorbers, etc. The disc break helps the rider to stop the vehicle at once and it has been used in Hero Honda and Bajaj motorcycles.

4.5.3 Design and Engineering

The EDGE introduced by TVS looks quite similar to the GL/GLX models. It is very difficult to differentiate between various variants of the victor while seeing on the road. New technology has increased the life and durability of the engine, besides enhancing fuel mileage.

4.5.4 Performance

A 100 cc motorcycle loses considerable power if there is a pillion rider, but with the EDGE, there is hardly any difference. The econometric system has become standard for all victors and is seen on the fuel gauge. It is especially useful for those for whom every drop of petrol counts.

4.5.5 Ride and Handling

The riding posture of the slipped seat is comfortable. The rider fits snugly into the well-contoured portion of the front part of the seat. The pillion is perched slightly higher than the front rider an onlooker could get the impression that pillion is taller. Ride is smooth over different terrains. The bike moved with ease, even as a stony village road. The front wheel tyre with four-ply rating has an important role to play while maneuvering in difficult conditions. The long wheelbase and spring arm contribute to better ride and handling on plain road. The fuel consumption is not as higher as 150 cc bikes

and power delivery is definitely better than 100 cc machines. The EDGE is essentially an upgraded version of the famous victors from TVS, which have created a reputation for their ruggedness and low maintenance costs.

4.5.6 Ride Quality

The self-starter seemed to work well on both models. The pleasure, with its 102 cc Hero Honda engine definitely has an edge over the 90 cc Pep+ of TVS. The difference was more obvious with a pillion rider. Driving now is a pleasure with the self start.

The wide seats on both the models made the ride comfortable but the feel on the pleasure was a bit better. The pleasure boasts of its puncture-resistant tuff tubes, a technology which offers an immediate remedy in case of a tyre puncture by secreting an anti-puncture sealant gel, whereas the pep talks about puncture resistant tyres.

Scooty has been around for sometimes and is re-launched with the new features added to the existing Scooty Pep and Hero Honda too has its share of experience in the Indian two-wheeler market for Activa and the Dio. “The Pleasure”, in addition to being available at the regular dealerships is also be retailed through 22 exclusive ‘just 4 her’ showroom in India, which will cater exclusively to Women customers.

4.5.7 Fuel Efficiency

TVS now offers an auto choke mechanism in the scooty Pep, to improve mileage by regulating fuel flow based on the engine section. All two-wheeler vehicles having four stroke engine are giving economy mileage.

4.6 RECENT USE OF TECHNOLOGY IN TWO-WHEELERS

In this section, an attempt has been made to give an overall view of the recent trends in the manufacturing technology of two wheelers as adopted in the Ranipet Division of Royal Enfield where two-wheelers are produced in most modern designs. The same process more or less takes place at all the manufacturing division of two-wheelers.

The processes adopted in mass production technology of today are also a major contributing factor in the production of high quality vehicles. The repeatability of the machines and the processes ensure a very high quality in all the components of a vehicle such that the combined quality of the vehicle becomes a sum-total, thereby, the reliability of the product is almost absolute.

Let us take a look at some of the advanced manufacturing techniques used in Royal Enfield at Ramie.

4.6.1 Machining Centers

With the changing pattern in the Indian Automobile Industry, it becomes necessary for every manufacturer to equip itself with the possibility of producing more than one model to cater to the wide spectrum of users who have become very demanding due to a variety of reasons. Earlier concept was to have special purpose machines to do only one specialized operation or a set of operations and thus the SPMs become 'rigid', repeating the same cycle of operations. Where more than one model is to be produced, it demands different kinds of SPM lines for each model. Economies of investment on SPMs put a constraint on the manufacturer to delay the needed changes in the product to satisfy the user requirements. The CNC machining centre is the answer to this handicap of SPMs. These machining centres can be machining on 4 axes (even 5th axis if possible) with linear interpolation on all axes simultaneously. This can also perform circular interpolation producing high

degree of repeatable accuracies. Multi-pallet system can also be used to cut down the expenditure. Though there are still some apprehensions about the capabilities to meet the high volume of production by machining centres, our own experience with half-a-dozen machining centres has proved to be a viable one. Further, these machining centres offer quick response to product-mix changes and an intelligent design of work fixtures offers a set of components to be machined simultaneously, which reduces the batch type inventories. When high volume of production is required, it is possible to hook up all these CNC machining centres to a central computer to give commands to various units and make it a "Flexible Manufacturing System" which corresponds to the transfer line technology.

4.6.2 CNC Machines

In the modern concept of manufacturing facilities, the stress is more on dimensional accuracies obtained through machine capabilities which will practically eliminate possible human errors. It is, in this context, that latest technology machines are equipped with computer controlled slide movements and tool changes. The firm in Ranipet has resorted to such concept by going in for CNC chucking autos and CNC lathes. These machines have the best facilities to maintain quality standards, dimensional accuracies and repeatability with built-in control system to ensure best quality output. Apart from this, these machines are capable of very high output with a possibility of a single machine doing varieties of operations in a single set up; thus eliminating the requirement of doing such jobs with number of machines in different operations. The quality output and repeatability is so good that it completely eliminates the skill requirements from the operators; thus ensuring safety against any possible human errors. In addition to the above, these computer controlled numerical machines have maximum flexibility to do different types of jobs with minimum time requirement for changeover from one setting to another one. These machines are such that they are programmable and these programmes can be written, edited and punched into tapes outside machine, so that, practically there is no loss of time in setting up

these machines from one job to another. The productivity of these machines is as high as 8 to 10 times with assured quality output.

4.6.3 Special Purpose Machines with Flexibility to suit Special Requirement

In Ranipet factory, since the Royal Enfield was going in for a full range of products from 50 cc Mopeds to 163 cc Motorcycles, It was felt necessary to have a different approach in manufacturing facilities of certain special types of SPMs. This is basically to ensure maximum flexibility from one product range to another product range. This analysis showed that it was worth attempting to incorporate flexibility even in SPMs. This confidence stemmed basically from the study of the complete range of products which showed that the configuration of components that go into different models were identical in shape with dimensional variations. No doubt it was a challenging job. Now after using these flexible SPMs for more than a year and after having produced different models, it is felt that flexible SPM concept is worth pursuing in the present day Indian conditions.

4.6.4 Honing with Auto-Sizing

In most of the factories, honing operation is carried out by highly skilled people who specialize on the honing machines available to get the best possible accuracy and dimensional control. It is not necessary here to stress how important it is to control the dimension of the bore in any cylinder to get good performance of the engine. With the development of auto-sizing technology, the bore of the cylinder is consistently monitored in the process and the honing operation is automatically stopped the moment the desired size is achieved. This type of process size control was introduced on grinding machines quite some time back in machine tool and auto-mobile industry. With the introduction to autosizing in critical operations like honing, the level of accuracy in such vital components has enhanced considerably thereby contributing to the overall performance of the engine.

4.6.5 Port Cleaning by Electro Chemical Machining

In case of two wheelers fitted with 2 stroke engine, the port dimensions and their locations play a very important part in the performance of the engine, where the cylinder is made of cast iron. It was a common practice to leave the ports un cast, thereby accepting the deviations imposed by casting techniques. In some cases, a milling operation was carried out only on transfer ports at top to make the port opening and closing sharp. With the introduction of aluminum cylinders, accuracy of port dimensions improved. Cleaning of ports with flexible grinder was resorted to remove burrs which could damage the piston, piston ring, and cylinder itself during the running of the engine. Most advanced process technology in this regard is a cleaning of the ports by electro-chemical machining process.

This process uses the work piece as anode and cathode as electrodes. These are positioned in the machine with a gap of 0.5 – 2 mm between the anode and the cathode. The electrode shape corresponds to the profile to be machined. In the case of cylinder, the profile to be machined is of that port, an electrolyte is forced through the gap at a pressure upto 5 bar and then a working voltage is applied. The resultant current removes metal from the profile. By this process exact duplication of the profile of the cathode is obtained on the work piece. Earlier this operation was carried out by hand tools involving skill and time. This modern technology allows fool proof machining of cylinder ports even by an unskilled operator.

4.6.6 Die-Cast Wheels

Die-cast wheels have totally changed the complexion of the two wheelers in the recent past. The perennial problem of truing the wheel specially on bad roads is a nightmare to the users to two wheelers. Die-cast wheel is a perfect answer to many problems faced on spoked wheels.

RPT division has gone in for die-cast wheels for the complete range of modern two wheelers being produced there. The manufacturing technology

allows to be manufactured with a run out of as low as 0.2 mm in both the directions; thus allowing the tyre to run absolutely truly throughout its life. The alloy and the design of the wheels are such that a die-cast wheel has got much greater strength than the spoked wheel under identical conditions.

The horizontal die casting machine we use for the manufacture of these wheels is of 1100 ton capacity and with a cycle time of just around two and a half minutes, we are able to take out more than 550 wheels per day. Considering that the time required to finish the die-cast wheels is only in trimming and boring operations, we feel that die-cast wheel has all the advantages that are required to make a modern two wheeler highly reliable and efficient vehicle.

4.6.7 Automatic Welding

Arc welding is an integral part of the manufacturing of the chassis in any two wheeler industry. While in most of the factories welding is done manually, the modern technology allows it to be done automatically. In order to improve the strength, CO₂ welding is resorted to. The automatic welding calls for very close dimensions of the parts that are to be welded together as the machine does not make any difference between good and bad parts. As a pre-condition for the use of automatic CO₂ welding, a series of automatic machines are required for the production of components that go on the chassis and are welded on these machines. The use of automatic welding machines calls for parts of consistent quality and thereby the frames produced on these automatic welding machines are of a very high standard and consistent quality. We have also built into some of these machines flexibility to weld vehicle components from 50 cc to 175 cc with change in fixtures only.

4.6.8 Disc Painting

In the same category, application of paint by disc is a great improvement in the painting technology. In addition to improving the consistency of the painting, it also reduces the quality of paint consumption

considerably compared with normal hand spraying. Electrostatic spraying itself gives 15 – 20% reduction in paint consumption. Application of disc further reduces the consumption by another 10 – 15%, thereby giving overall reduction of 30% in the paint consumption. Of course, for disc application of paint, special paints have to be developed.

The use of disc calls for a continuous supply of parts for paint application. Unless the productivity is matched, the overall cost of painting may not be economical; but as a good painting technology, disc painting is definitely far superior to any other form of spray painting.

4.6.9 Powder Coating

Powder coating is another technology which has tremendous potential specially for our conditions. Unlike in the past where all the parts of the vehicle are painted more or less with the same paint irrespective of its location, use and requirement, powder coating of parts that are on the lower part of the chassis in a two wheeler will definitely help in preserving the paints on these parts very effectively. Depending upon the requirement, different powders can be selected and coated to different thicknesses to give different scratch and wear properties on the vehicles.

4.6.10 Metrology and Quality Assurance

With the recent change in the manufacturing technology in two wheeler industry, the functions of Quality Control and Measurement also has changed with utmost emphasis on Assurance during production processes and conversions. It is important to ensure quality at source. With this in view, the inspection, metrology and testing technologies have drastically changed in the two wheeler industry.

4.6.11 Upgraded Technology

In addition to the manufacturing technology which is contributing to the performance of highly efficient and reliable two wheelers, upgraded

technology in some fields, a few of which are mentioned below, are also responsible for upgrading the technology in general in the two wheeler sector.

A) Aluminum Cylinder with Hard Chrome Plating

This, in addition to reducing the weight of the cylinder, avoids the wear of the cylinder which necessitates rebooting or changing of the pistons. The life of the hard chrome plated aluminum cylinder is almost infinite and as such, with a well matched piston and piston ring assembly, the engine gives extremely good trouble-free life to its users thereby avoiding the necessity to open the engine for any of the problems.

B) Weight Controlled Parts

Due to accurate forging technology, the weights of the piston and connecting rod are controlled within such a close tolerances that the consistency of the engine performance has greatly improved thereby contributing to the consistent performance of the vehicle to its user.

C) Electronic Ignition

The specific output of tow wheeler engine has been steadily increasing over the years and it is quite common in the present day vehicles to have engine with the specific output of 10 HP per 100 cc. One of the obvious requirements of such high specific output is the increased speed of the crankshaft; sometimes going upto 8000 rpm. Although the mean piston speed is controlled by reducing the stroke, the high crankshaft rpm gives enough problem in a conventional magneto where the CB point has to make and break 8000 time, a minute in case of a 2 stroke engine. Due to the inertia limitations, the timing can not be guaranteed with a CB point at such a high speed and this problem has been solved by the use of electronic ignition. It is also possible with the development of electronic ignition to advance the

time as the speed increases thereby giving enough time for combustion. This again increases the combustion efficiency thereby improves the overall efficiency of the engine. This upgraded technology also reduces the maintenance of the vehicle to its user.

D) Stainless Steel

In all the places where the humidity is high, corrosion is almost unavoidable even on efficiently chrome plated parts such as mudguard. Proper grade of stainless steel has eliminated this problem almost completely. Availability of the right type of stainless steel locally has given a good boost for the use of stainless steel in the Indian two wheeler industry.

E) Electro Etching and Deburring

Noise is another form of pollution which is also an irritant. Due to high rotating speeds of modern machines, any high spot on rotating gears causes excessive noise which becomes a source of irritation during acceleration and deceleration. Electro-etching and deburring is the latest method of detecting and removal of high spots in matching gears.

4.7 A CASE OF BAJAJ AUTO LIMITED

In this section, Bajaj Auto Limited has been taken as a case study which switched over to Japanese technology. Bajaj, in latter part of 1990's, has concentrated more on the production of motorcycle rather than scooter. The other firms which continued with Italian technology could not progress. The following points clearly prove that Bajaj has been the second largest producer of motorcycle. Even being one of the oldest firm in the segment of two-wheelers, Bajaj shut its scooter production but continued to operate with great success only due to adoption of new technology.

At the beginning of this chapter, information on the technology used by various firms is given. The technology used by Bajaj Auto Limited was supplied by M/s. Piaggio of Italy. The same technology has later been supplied to M/s. LML Limited and Andhra Pradesh Scooters Limited, which was also closed down.. However, Bajaj Auto only could progress. The history reveals that, after 1971, when the collaboration agreement of Bajaj Auto ended, the firm developed the production further with its own R. & D. efforts. The product was made superior by the firm. This gave better value to the customer. The firm believes in "Value of Research and Development. The expenditure made by Bajaj on R. & D. has contributed the firm to grow faster than those who spend less on it. Kinetic Honda Motors and TVS Suzuki Limited are having equity participation of foreign collaborator and as such the efforts on in-house R. & D. are lower.

The technology used by Automobile Products of India was from Innocenti, Italy. The firm did not make much impact on the consumers. The firm claimed the advantage of centralized position of engine compared to Vespa of Piaggio. However, the greater advantage of Vespa technology was its direct drive against chain drive. The Vespa had advantage of pick up, low engine noise, light weight and fuel economy.

When Scooters India Limited started the production on Vijay Scooters; the same technology of Innocenti, Italy was used. Scooters India gave technical collaboration to 7 other State Governments for manufacturer of Scooters. All the 7 state enterprises failed to produce due to direct competition with superior technology of Bajaj Auto. Same thing happened with Three Wheelers. Scooters India Limited and Automobile Products India Limited started three wheelers with Innocenti Technology while Bajaj Auto adopted Piaggio Technology. The result is seen. Bajaj Auto holds 95% market share today.

The products of Bajaj Auto initially claimed heavy premium in the market. Later when other players entered, the premium vanished. But the demand for this product did not get reduced. The market growth was fast due to increased use of two-wheelers by people. This was increase in demand for Bajaj vehicles due to the following factors.

a) Superior Quality

Bajaj Auto believes in high quality of the product. The firm continuously monitors the product quality right from the stage of supply parts, manufactured parts and the final product. The firm gets benefits of high quality products due to lower rejection costs. Thus the quality costs are lowered indirectly.

The fact that quality of the product is superior is witnessed by the resale value of the product. No other product has good resale value. Many customers have realised more price on resale than their original investment on purchase of the Bajaj vehicles. The customer purchasing second hand vehicles value the product more due to its superior quality.

The product life cycle is more than 15 years. Many customers own vehicles purchased even more than 20 years. The superior quality counteracts on low demand as customers do not change the vehicle in short time. However, the established brand and quality made the firm achieve higher growth rate in production and markets.

b) Larger Dealer Network

Many vehicle manufacturers could not succeed due to non-availability of proper distribution network. Bajaj Auto from the beginning established its dealer network for sale of Bajaj Vehicles. The firm has more than 1000 vehicles and service dealers all over the country. The vehicles are made available to the customer with each dealer with choice of colour and model. Bajaj Auto produces Chetak, Super, Cub, Classic, Super FE, both in normal

and metallic colours. The dealers also render after sale services to the customers. Hero Honda got the benefit of Majestic Auto dealership. LML had to establish the network as the firm was not in vehicle field earlier. Kinetic Honda and Kinetic Engineering had common dealers. Maharashtra scooters got the benefit of Bajaj Dealer network. Other firms in the two wheeler sector could not establish sales outlets. Many firms were not even able to produce vehicles to call for a wide dealer network.

c) Lowest Prices

The prices of Bajaj vehicles are lowest compared to other firms producing similar models. Kinetic Honda Motors have priced its scooter the highest in the scooter segment. Bajaj Motor Cycles are also cheaper compared to others. In Moped segment, Bajaj Sunny has lower price compared to its near competing product. The other manufacturers in the two wheeler segment find the costs of production very high. All the Japanese vehicles made in India faced problems of yen appreciation. The Motor Cycles in 100 cc category and Kinetic Honda Scooter was initially made out of imported CKD parts from Japan. The prices of the vehicles were high due initial high cost of production. Bajaj Auto got the benefit of established infrastructure. Any new comer in the two wheeler section will find that its initial cost of production is very high due to heavy investment required on initial infrastructure.

Bajaj Auto got the benefit of mass production economy and the experience effect. Its plant at Akurdi, Pune, was not planned properly for a mass production. The capacities were added in piecemeal as and when the Government of India permitted increase in licenced capacity. However, the plant at Waluj, Aurangabad is well laid out to take care of the mass production. As the plant became older, the burden of fixed costs came down and so the cost per vehicle. Bajaj Auto believes in low profit per unit but high volume. This strategy helped keeping the prices of vehicles at lower level and yet getting reasonable return to the shareholders. The capacity utilization of other firms was very low resulting in high costs and hence the high prices.

d) High Productivity

The use of productive resources efficiently gave benefit to Bajaj Auto to produce more and become market leader. The firm got productivity awards in Engineering Industries. The manpower productivity and machine utilization are closely watched by the management. The firm believes in modern methods of production. Highly productive machines with flexible production technique have been helping the firm to achieve the spectacular growth.

The other firms which could not continue production were not having latest production methods. The firms established in financial collaboration with Japanese two wheeler giants are following modern methods of production. Hero Honda Motors has already achieved a very high production level. LML is planning to produce three times more than the present capacity. Thus the other firms are following the latest manufacturing techniques much later than the leader firm Bajaj Auto Limited. There is still scope to increase production as the firms capacity is not fully utilized in 1994.

e) Cheaper Spare Parts

The vehicles produced by Bajaj Auto are not required to be repaired for a long time due to their high quality. In case of maintenance, the spare parts are available at various places which are near to customers place. The prices of spares are comparatively cheaper than those of other vehicle manufacturers. This has resulted in gaining customer confidence in the product. Some observers feel that Bajaj Auto is producing 50 year old models. There is definitely advantage of continuing the same model as the customers need to be educated for maintenance and the spares can be made available for a long period of time.

The vehicle manufacturers who phased out their models faced problems in supplying spares for old models. There are large numbers of firms in two wheeler industry who produced vehicles and stopped the same after some time. These vehicles could not be serviced for want of spares. Vijay

Pushpak, Vijay Super etc. These names of historical vehicles for which spares are not available and hence the vehicles also gone behind the curtain of history. This gave the customers new sight to look at the established brand and available warranty for considerable long time. Bajaj Auto has satisfied this customer requirement. The Kinetic Engineering and Majestic Auto are having quite long standing. But the product produced by them needs often maintenance and the spares are also costly.

The vehicles manufactured by Bajaj Auto Limited can be maintained by road side machines due to its ease of servicing. The other models of scooter are having more features which make the maintenance complicated.

f) Fuel Efficiency

The vehicles manufactured by Bajaj Auto are fuel efficient as compared to other models. The scooter produced by Kinetic Honda gives better facilities of self start but it has drawback of lower fuel efficiency. Hero Honda Motor cycle is fuel efficient but Bajaj four strokes Motor Cycle is more fuel efficient.

g) Customer Satisfaction

Managing Director of Bajaj Auto says, "A company should have the objective to meet the needs of its customers in the most satisfactory manner. The objective of a company should not be to maximize profits, as many people believe. Profits are not an objective of the company. They are the need of a company. A company needs profits to reward its shareholders and to plough back in the company's operations so that the company can grow. To satisfactorily meet the needs of the customers, it should be the basic objective of a company. If a company successfully achieves this objective, it simultaneously ensures that it also maximizes its profits, at least in the long run."

The above objective has been pursued by Bajaj Auto Limited to remain in leading position in the areas of latest technology, higher production growth, better capacity utilization and highest market share.

Having chosen the leader firm on the basis of growth in production, the study of the firm in respect of sales, market share, and profit in comparison with other two wheeler firms has been given in chapter no. 3.

4.8 REVIEW OF GROWTH OF FIRMS BASED ON PRODUCTS AND TECHNOLOGY

The growth of firms in terms of production, sales, and market share also depends on the technology used in production and capacity utilization and the product itself. The consumer's demand is directly linked to the value of product which comes from the quality, fuel efficiency, safety, design of product etc. these aspects are in-built in the product by using latest advanced technology at lower cost to the customer. The various firms in Two Wheeler industry mostly using imported technology have demonstrated their dominating position in the market, for instance, Bajaj Auto Ltd. is the undisputed leader in the scooter, while Hero Honda has higher market share in motorcycle and Kinetic Engineering has maintained its leadership in the field of Moped in Two Wheeler segments. These three firms have maintained their leadership ranking first in the field of scooter, motorcycles, mopeds respectively since their inceptions. There are very few firms which have developed the product using indigenous technology.

4.9 HOW VARIANT TECHNOLOGY WORKS?

The variant design is intended for use with Exhaust Gas Recirculation (EGR) systems, where some of the exhaust gas is used to lower the combustion temperature in the engine cylinders, thus producing less nitrogen oxide and particulate emissions.

The inlet air flows from left to right in the picture. As the air passes around the venturi shape, it speeds up and the static air pressure decreases. The pressure drops below the level of the reticulated exhaust gases, and they are drawn into the flow with the inlet air. Altering the position of the aerodynamically shaped body can vary the pressure at the “throat” of the Variant unit. This allows the amount of EGR to be varied within a wide range.

In this section, we will study those firms that have introduced vehicles based on new technology.

4.10 ESCORTS YAMAHA’S 4-STROKE MODEL FOR HIGH FUEL ECONOMY

Escorts Yamaha Motor Ltd. (EYML), one of the India’s leading two-wheeler manufacturers with the largest market share in 2-stroke motorcycles today has launched YBX-125, the first 4-stroke motorcycle in India, to combine remarkable fuel economy with high-power performance. The new model vehicle which has the revolutionary low fuel consumption SOHC 125 cc single cylinder engine is the first Yamaha 4-stroke ever to be introduced in the Indian market.

Internationally, Yamaha is the only company which has technological supremacy in both 2-stroke and 4-stroke motorcycles. A market study has shown that there is a growing demand for 4-stroke motorcycles that offer not only fuel economy but also power. The YBX 125 has been specially designed to offer both high-powered performance and fuel efficiency, all in one machine.

With the launch of the YBX 125, which offers the latest generation Yamaha 4-stroke technology, a whole new class of motorcycles will be introduced in India. Designed with a fresh styling, the motorcycle offers twin

benefits of performance and economy, thereby making it a bike for all occasions – may it be business or pleasure.

The YBX 125 has several firsts to its credit, which give it an edge over all other 4-stroke motorcycles launched in India. The motorcycle mounts an air cooled 4-stroke SOHC 125 cc single cylinder that gives it an unmatched balance of fuel economy and power. The fuel economy is 75 kmph and is backed with power of 11 BHP @ 8500 rpm.

The technology used in China in ancillary units is far superior to in India. It is obvious from the table given below.

Table 4.1 : India's Import and Exports for Technology

(Rs. Crores)

Years	India's Exports	India's Imports
2002-03	69.34	47.44
2003-04	107	90.81
2004-05	88.45	140.00
Jan-Aug 05	57.7	185.8

Source : SIAM

India's export to China has declined from Rs. 69,34 crore in 2002-03 to Rs. 57.7 crore in Jan-Aug 05 while India's import from china has registered remarkable increase i.e. Rs. 47.44 crore in 2002-03 to Rs. 185.8 crore in Jan-August 05.

4.11 RECENT DEVELOPMENT OF AUTOMOBILE TECHNOLOGY IN INDIA

The latest automobile technology used in India for the petrol driven vehicles is the MPFI or the Multi Point Fuel Injection, which helps in keeping the pollutants at minimum levels to derive the maximum functional performance from a vehicle. The main benefits of the use of this automobile technology in India are:

- superior fuel combustion
- engine performance
- better fuel management
- reduced pollution.

The Automobile Technology in India used for the diesel driven vehicles is the CRDI or Common Rail Direct Injection which offers more powerful engines to the vehicles than the normal direct injection engines. The benefits of the Common Rail Direct Injection engines are:

- smooth and less noisy
- high fuel efficiency
- more economical than petrol

4.12 ACHIEVING THE HIGHEST LEVELS OF CUSTOMER SATISFACTION

With 70 per cent of the vast population of India being under 40, this young and vibrant India is more focused on consumption than savings - and as the consumer mindset changes, so are their expectations. With the Indian consumer being wooed by glitzy, multi-million dollar marketing campaigns, the range of choices is extensive. This new generation has high levels of international exposure, which has led to a major change in their expectations of the quality of products and services that they receive from people like you and me.

Increasingly, what were considered 'value-added services' a few years ago, are fast becoming hygiene services something that we are expected to provide as routine. Loaner cars and cashless transactions for insurance-based repairs are just some of the demands that today's savvy customers expect as the norm.

Customer handling, throughout the entire ownership experience, from the first test drive, through the regular service check-ups, and finally to the trade-in process on the next vehicle purchase, is extremely critical to upholding our brand image. As we all know, it takes years of continuous and consistent focus on customer satisfaction to build our reputations and one misstep destroys it.

The dealers have extremely important responsibility to uphold the brand image of the vehicle manufacturers. As manufacturers, the only touch points they have with their customers are through sales floor or service workshops. And in return, the manufacturers, are responsible to maintain profitable operations. The dealers deserve to get the necessary returns on investments they have made.

The manufacturers give exciting products to the customers must give you exciting products, built with outstanding quality, and price them competitively to allow them to generate the returns to reinvest in their dealerships. The dealers should develop and maintain cohesive and consistent national and local marketing campaigns to generate the prospects that are so critical to their business. And finally, the dealers must train their sales and service staff to handle vehicles which are becoming extremely complex with the high levels of technology that are being brought into the industry.

With these shared responsibilities, it is the quality of the relationships that is being maintained, between manufacturers and dealers, which decide how they survive in this extremely competitive environment. Here again, it takes honest and open communication to build the mutual trust that is necessary for such a critical association, and it takes only one misplaced action or word to destroy a relationship that may have taken years to establish.

Needless to say, state-of-the-art diagnostic and repair equipment is a must to inspire customer confidence. Besides helping to get the most efficient

turnaround on short repairs, they ensure quicker and more accurate diagnosis of complex vehicle problems.

✦ It is absolutely critical to promote the use of genuine spare parts and accessories among all our potential and current customers. This needs to be woven into the sales and after-sales process.

Genuine parts are specifically engineered to ensure that our vehicles continue to operate at optimum levels of performance and safety. While it may be possible to reverse engineer any part, one cannot replicate it in its entirety, and missing key characteristics are very likely to compromise the integrity of a vehicle system.

For example, Ford offers collapsible steering columns to minimize chest and knee injuries in frontal impacts. These steering columns are specifically designed to collapse based on the deformation of the vehicle's body structure and any effort to replicate this steering system will definitely leave a big gap in the overall crash performance of the car. The industry has already seen numerous failures of after-market electrical accessories, which have led to loss of property and, in some cases, human lives.

4.13 TECHNOLOGY USED IN MANUFACTURING FOUR-WHEELER

There is need to focus on technology used in car manufacturing. The drive is a long one or let's put it this way, it's a never-ending driveway. Since the invention of the wheel, man's quest for automotive mobility led him to experiment with various kinds of vehicles. From the steam - driven engine to the jet propelled aircraft, we have come a long way. And of course, besides the shapes, it is the technology behind them that has transformed the automotive landscape. Different systems like the engine, electrical, cooling etc. combine to makeup a vehicle. Each works on disparate principles, yet collectively, it is on them that the performance of the vehicle depends.

We drive our cars and our bikes, but seldom know the mechanics involved. Here, we bring out to study the different systems and sub-systems that go in the making of an automobile.

4.13.1 Body

The body of an automobile is categorized according to the number of doors, the arrangement of seats, and the roof structure. Their roofs are conventionally supported by pillars on each side of the body in recent times. There are convertible models with retractable fabric tops that rely on the pillar at the side of the windshield for upper body strength, as convertible mechanisms and glass areas are essentially nonstructural. The glass areas have been increased for improved visibility and for aesthetic reasons.

Redesigning was a tough job in the past, when as much as four years of planning and new tool purchasing was needed for a completely new design. Computer-aided design (CAD) and computer-aided manufacturing (CAM) techniques may now be used to reduce this time requirement by 50 percent or more.

Sheet steel is generally used to make automotive bodies. Elements are added to the alloy to improve its ability to be formed into deeper depressions without wrinkling or tearing in manufacturing processes. Steel is used because of its general availability, low cost, and good workability. Other materials such as aluminum, fiberglass, and carbon fiber reinforced plastic are used because of their special properties. For more toughness and resistance to brittle deformation, polyamide, polyester, polystyrene, polypropylene, and ethylene plastics have been formulated. Tooling for plastic components generally costs less and requires less time to develop than that for steel components.

Painting and priming processes are used to protect bodies from corrosive elements and to maintain their strength and appearance. Bodies are

first dipped in cleaning baths to remove oil and other foreign matter and then they go through a succession of dip and spray cycles. Enamel and acrylic lacquer are both in common use.

Electrode position of the sprayed paint, a process in which the paint spray is given an electrostatic charge and then attracted to the surface by a high voltage, helps assure that an even coat is applied and that hard-to-reach areas are covered. To speed up the drying process in the factories, ovens with conveyer lines are used.

4.13.2 Chassis

The chassis forms the main structure of the modern automobile. A large number of designs in pressed-steel frame form a skeleton on which the engine, wheels, axle assemblies, transmission, steering mechanism, brakes, and suspension members are mounted. During the manufacturing process the body is flexibly bolted to the chassis.

This combination of the body and frame performs a variety of functions. It absorbs the reactions from the movements of the engine and axle, receives the reaction forces of the wheels in acceleration and braking, absorbs aerodynamic wind forces and road shocks through the suspension, and absorbs the major energy of impact in the event of an accident.

There has been a gradual shift in modern small car designs. There has been a trend towards combining the chassis frame and the body into a single structural element. In this grouping, the steel body shell is reinforced with braces that make it rigid enough to resist the forces that are applied to it. To achieve better noise-isolation characteristics, separate frames are used for other cars. The presence of heavier-gauge steel components in modern separate frame designs also tends to limit intrusion in accidents.

4.13.3 Engine

Automotive production down the ages has required a wide range of energy-conversion systems. These include electric, steam, solar, turbine, rotary, and different types of piston-type internal combustion engines. The reciprocating-piston internal combustion system, operating on a four-stroke cycle, has been the most successful for automobiles, while diesel engines are widely used for trucks and buses.

The gasoline engine was originally selected for the automobile due to its flexibility over a wide range of speeds. Also, the power developed for a given weight engine was reasonable; it could be produced by economical mass-production methods; and it used a readily available, moderately priced fuel--gasoline. Reliability, compact size, and range of operation later became important factors.

In today's world, there has been a growing emphasis on the pollution producing features of automotive power systems. This has created a new interest in alternate power sources and internal-combustion engine refinements that were not economically feasible in prior years. Although a few limited-production battery-powered electric vehicles have appeared from time to time, they have not proved to be competitive owing to costs and operating characteristics. However, the gasoline engine, with its new emission-control devices to improve emission performance, has not yet been challenged significantly.

The first half of the twentieth century saw a trend to increase engine horsepower, particularly in the American models. Design changes incorporated all known methods of raising engine capacity, including increasing the pressure in the cylinders to improve efficiency, increasing the size of the engine, and increasing the speed at which power is generated. The higher forces and pressures created by these engine vibration and size problems that led to stiffer, more compact engines with V and opposed

cylinder layouts replacing longer straight-line arrangements. In passenger cars, V-8 layouts were adopted for all piston displacements greater than 250 cubic inches (4 litres). Smaller cars brought about a return to smaller engines, the four- and six-cylinder designs rated as low as 80 horsepower, compared with the standard-size V-8 of large cylinder bore and relatively short piston stroke with horsepower ratings in the range from 250 to 350.

The automobile engines from Europe had a bigger range, varying from 1 to 12 cylinders with corresponding differences in overall size, weight, piston displacement, and cylinder bores. Four cylinders and horsepower ratings from 19 to 120 was followed in a majority of the models. Several three-cylinder, two-stroke-cycle models were built while most engines had straight or in-line cylinders. There were several V-type models and horizontally opposed two- and four-cylinder makes too. Overhead camshafts were frequently employed. The smaller engines were commonly air-cooled and located at the rear of the vehicle; compression ratios were relatively low. The 1970s and '80s saw an increased interest in improved fuel economy which brought in a return to smaller V-6 and four-cylinder layouts, with as many as five valves per cylinder to improve efficiency

4.13.4 Internal -Combustion Engine

Fuel combustion takes place in a confined space, and produces expanding gases that are used to provide mechanical power. The four-stroke reciprocating engine that is used in automobiles is the most common internal-combustion engine. In this mechanism, mechanical power is supplied by a piston that is fitted inside a cylinder. On a downstroke of the piston, the first stroke fuel that has been mixed with air (by fuel injection or using a carburetor) enters the cylinder through an intake valve; the piston moves up to compress the mixture at the second stroke. At ignition, the third stroke, a spark from a spark plug ignites the mixture, forcing the piston down; in the exhaust stroke, an exhaust valve opens to vent the burned gas as the piston moves up. The piston is connected to a crankshaft by means of a rod. The reciprocating

(up and down) movements of the piston rotate the crankshaft, which is connected by gearing to the drive wheels of the automobile. The ignition spark is provided by an electrical system whose power comes from a battery. This also supplies power to the starting system, which is a small electric motor that turns the crankshaft until the engine takes over. Water circulating around the cylinders cool the engine, and lubrication occurs motor oil that is driven around the moving engine parts by an oil pump. Small vehicles like lawn mowers and motorcycles use the two-stroke engine, which combines intake and compression in the first stroke and power and exhaust in the second.

4.13.5 Diesel Engine

This type of internal combustion engine was patented in 1892 by the German engineer Rudolph Diesel. It burns fuel oil instead of gasoline and is heavier and more powerful than the gasoline engine. It differs from the gasoline engine in that the ignition of fuel is caused by compression of air in its cylinders instead of by a spark. By varying the amount of fuel injected in the cylinder, the speed and power of the diesel are controlled. Industrial and municipal electric generators, continuously operating pumps such as those used in oil pipelines, and ships, trucks, locomotives, and other such automobiles widely use diesel to power.

4.13.6 Fuel Injection

In an internal combustion engine, the fuel injection system is that which delivers fuel or a fuel-air mixture to the cylinders by means of pressure from a pump. It was originally used in diesel engines because of diesel fuel's greater viscosity and the need to overcome the high pressure of the compressed air in the cylinders. A diesel fuel injector sprays an intermittent, timed, metered quantity of fuel into a cylinder, distributing the fuel throughout the air within. Fuel injection is also now used in gasoline engines in place of a carburetor. In gasoline engines the fuel is first mixed with air, and the resulting mixture is delivered to the cylinder. Computers are used in modern fuel injection systems to regulate the process. The positive effects of fuel

injection are that there is more efficient fuel combustion, better fuel economy and engine performance and reduced polluting exhaust emissions.

4.13.7 Carburetor

This is a device in a gasoline engine. It vaporizes the gas and mixes it with a regulated amount of air that aids in efficient combustion in the engine cylinders. Land vehicles, boats, and light aircraft have a float carburetor, in which a float regulates the fuel level in a reservoir from which the fuel is continuously sucked into the intake manifold at a restriction called a venturi. The carburetor has been replaced by the fuel injection system in many modern vehicles.

4.13.8 Electrical System

The electrical system consists of a storage battery, generator, starting (cranking) motor, lighting system, ignition system, and various accessories and controls. It was difficult to meet high ignition voltage requirements with the increased engine speeds and higher cylinder pressures of the post-World War II cars. The larger engines required higher cranking torque. Additional electrically operated features, such as radios, window regulators, and multispeed windshield wipers, also added to system requirements. 12-volt systems generally replaced the 6-volt systems in 1956 production to meet these needs.

The ignition system consists of the spark plugs, coil, distributor, and battery, and provides the spark to ignite the air-fuel mixture in the cylinders of the engine. In order to jump the gap between the electrodes of the spark plugs, the 12-volt potential of the electrical system must be stepped up to about 20,000 volts. This happens with the aid of a circuit that starts with the battery, one side of which is grounded on the chassis and leads through the ignition switch to the primary winding of the ignition coil and back to the ground through an interrupter switch. A high voltage is induced across the secondary

of the coil by interrupting the primary circuit. The high-voltage secondary terminal of the coil leads to a distributor that acts as a rotary switch, alternately connecting the coil to each of the wires leading to the spark plugs.

It was in the 1970s that solid-state or transistorized ignition systems were introduced. Increased durability by eliminating the frictional contacts between breaker points and distributor cams was provided by these distributor systems. A revolving magnetic pulse generator in which alternating-current pulses trigger the high voltage needed for ignition by means of an amplifier electronic circuit replaced the breaker point. Changes in engine ignition timing are made by vacuum or electronic control unit (microprocessor) connections to the distributor.

The generator is the basic source of energy for the various electrical devices of the automobile. An alternator that is belt-driven from the engine crankshaft is also used at times. The design is usually an alternating-current type with built-in rectifiers and a voltage regulator to match the generator output to the electric load and also to the charging requirements of the battery, regardless of engine speed.

To store excess output of the generator, a lead-acid battery is used which serves as a reservoir. Energy for the starting motor is thus made available along with power for operating other electric devices when the engine is not running or when the generator speed is not sufficiently high to carry the load. The starting motor then drives a small spur gear, which is so arranged that it automatically moves into mesh with gear teeth on the rim of the flywheel as the starting-motor armature begins to turn. As soon as the engine starts, the gear is disengaged, which prevents the starting motor from getting damaged due to overspeeding. The starting motor is designed for high current consumption and delivers considerable power for its size for a limited time.

4.13.9 Headlights

Night driving has long been dangerous due to the glare of headlights that blind drivers approaching from the opposite direction. Therefore, headlights that satisfactorily illuminate the highway ahead of the automobile for night driving without temporarily blinding approaching drivers have long been sought. To correct this problem resistance-type dimming circuits, which decreased the brightness of the headlights when meeting another car, were first introduced. This gave way to mechanical tilting reflectors and later to double-filament bulbs with a high and a low beam, called sealed-beam units.

There was only one filament at the focal point of the reflector in the double-filament headlight unit of necessity. Greater illumination required for high-speed driving with the high beam, consequently, the lower beam filament was placed off center, with a resulting decrease in lighting effectiveness. From the 1950s, manufacturers equipped their models with four headlights to improve illumination.

In some cars, dimming is automatically achieved. This happens by means of a photocell-controlled switch in the lamp circuit that is triggered by the lights of an oncoming car. Larger double-filament lamps and halogen-filled lamp bulbs with improved photometrics permitted a return to two-headlight systems on some cars. At many places the law limits the total intensity of forward lighting systems to 75,000 candlepower (800,000 lux).

In most new automobiles, lowering front hood heights for improved aerodynamic drag and driver visibility reduces the vertical height available for headlights. Due to this, lower-profile rectangular sealed-beam units and higher-intensity bulbs, in conjunction with partial parabolic reflectors with reduced vertical axis, were adopted in the 1970s. In some cases, models featured full-size concealed headlights that were not visible until turned on. An electric motor linkage was used to rotate the lamp housing or a housing cover into proper position to supply lighting. Aerodynamic benefits were provided by this system only when the headlights were concealed.

In the 1960s, signal lamps and other special-purpose lights were increased in usage. Amber-coloured front and red rear signal lights are flashed as a turn indication; all these lights are flashed simultaneously in the "flasher" system for use when a car is parked along a roadway or is travelling at a low speed on a high-speed highway. The law requires that marker lights that are visible from the front, side, and rear be also present. Red-coloured rear signals are used to denote braking, and, on some models, cornering lamps to provide extra illumination in the direction of an intended turn are available. These are actuated in conjunction with the turn signals. To provide illumination to the rear when backing up, backup lights are required.

4.13.10 Cooling System

Liquid cooling systems are employed by most engines today. A typical automotive cooling system comprises;

- (1) a series of channels cast into the engine block and cylinder head, surrounding the combustion chambers with circulating water or other coolant to carry away excessive heat,
- (2) a radiator, consisting of many small tubes equipped with a honeycomb of fins to radiate heat rapidly, that receives and cools hot liquid from the engine,
- (3) a centrifugal-type water pump with which to circulate coolant,
- (4) a thermostat, which maintains constant temperature by automatically varying the amount of coolant passing into the radiator, and
- (5) a fan, which draws fresh air through the radiator.

For operation at temperatures below 32° F (0° C), it is necessary to prevent the coolant from freezing. This is usually done by adding some

compound to depress the freezing point¹ of the coolant. Alcohol formerly was commonly used, but it has a relatively low boiling point and evaporates quite easily, making it less desirable than organic compounds with a high boiling point, such as ethylene glycol. By varying the amount of additive, it is possible to protect against freezing of the coolant down to any minimum temperature normally encountered. Coolants contain corrosion inhibitors designed to make it necessary to drain and refill the cooling system only once a year.

Air-cooled cylinders operate at higher, more efficient temperatures, and air cooling offers the important advantage of eliminating not only freezing and boiling of the coolant at temperature extremes but also corrosion damage to the cooling system. Control of engine temperature is more difficult, however, and high-temperature-resistant ceramic parts are required when design operating temperatures are significantly increased. Pressurized cooling systems with operating pressures up to 14 pounds per square inch (100 kilopascals) have been used to increase effective operating temperatures. Partially sealed systems using coolant reservoirs for coolant expansion of the engine overheats were introduced in 1970.

4.14 DIVERSIFICATION

This section deals with diversification which has been possible due to innovation of technology. The automobile firms in India are producing various types of vehicles such as cars, jeeps, heavy commercial vehicles, medium commercial vehicles, light commercial vehicles, three wheelers, motor cycles, scooters, mopeds, sport and racing vehicles, tractors, agricultural equipments etc. The automobile firms which first started production in India in 1946 have multiplied manifold during the last 50 years. Considering the number of firms and number of products, the study of any aspect of Indian automobile firms will have an unlimited scope.

Attention is focused on diversification. This is followed by an examination of the forces which encourage firms to achieve growth, motives for diversification and how these motives reflect size and growth of firms.

4.14.1 What is Diversification ?

Diversification is the process by which the modern corporation extends its activities beyond the products and markets in which it currently operates. It is a major determinant of the structure of modern industrial economics and has important implications for competition and efficiency.

Diversification occurs when a firm undertakes production of a new product, without ceasing production of its existing products. Thus diversification involves a firm producing products which are sufficiently different from its existing products.

E. Penrose (1950) has observed that diversification is one of the outstanding characteristics of a business firm and that it is inadequately treated in economics analysis. Sometimes it is called 'spreading of production' or 'integration' which seems to accompany their growth. Penrose (1959, pp. 109-11) says about diversification that a firm makes significant changes in its areas of technology, market and productive activities. She, therefore, has mentioned four different possibilities:

- a) When there are additional products within the firms existing technological bases and market areas.
- b) When there are products involving the existing technological bases destined to new market areas.
- c) When there are products which involves new technological bases for the existing markets, and
- d) When there are new products with new technological bases for new market areas. A firm in the process of diversification, which makes a firm enable to achieve growth in sales assets, undertakes these

possibilities. Thus, a firm producing engineering goods can produce cement. Bajaj is known for automobile production and Bajaj also produces electrical appliances. We will, therefore, call it 'diversification'. Because in this case the products are totally different and as a result of which the market 'area' for the firm expands from one class of consumers to another.

Let us analyze, in brief, the impact of diversification on size and growth of automobile firms. When a firm introduces a totally different product, there will be a change in productive services and marketing areas. Diversification thus not be conceived of as changes in products only; it also implies the other two aspects of change, i.e. changes in technological base and market areas. The firm has to create a market for the new products. A firm tries to make the products known to the consumers through advertisements. Once firms get a market for new products they want to introduce them in other markets. As a result a firm can achieve desired growth in sales, assets and market share. The size of such firms will also expand. In view of this theoretical background, a study of Telco, Maruti and Bajaj, Hero Honda and TVS, can be taken. These firms have diversified their products with the help of new technology. As a result, these firms have achieved more growth in terms of sales and output. For example, Tata motors is one of the largest producer in high and medium commercial vehicles. But Tata has started producing passenger car and utility vehicles car in the middle of 1990's. As a result, Tata has registered an increase in sales and market share. Every firm aspires for growth and diversification is a process for achieving higher growth.

4.14.2 Reasons and Motives for Diversification

The starting point here must be recognition of the high standing growth in terms of corporate objectives. Growth is normally measured in many ways. But, we have focused growth of firms in terms of increase in size and net assets. Diversification may take place for one or more reasons:

- a) From a desire to spread risks or compensate for seasonal or cyclical

fluctuations in demands.

- b) Because of the existence of the spare management of productive capacity.
- c) From a desire to grow faster and earn greater profits.
- d) Following a decision to exploit to the full an innovation of research result.

Why a firm wants to achieve growth and increase its size through diversification? It may be a policy of a firm to diversify its products in order to increase its size and sales. It is possible to identify a number of conditions under which diversification may be a necessary corporate policy. These conditions may be one or more of the following:

- a) Firm's inability to survive in existing market.
- b) Firm's slow growth rate in existing market.
- c) Risk spreading through diversification, etc.

On the basis of these conditions, a firm may adopt a policy of diversification. If a firm wants to maintain or achieve its dominant position in the market, the firm diversifies its produces. Thus, if the growth of a firm in existing market or product is very slow, the firm can follow a policy of diversification to achieve growth in sales and net assets. But it is not an easy task for a firm to achieve growth through diversification, because a firm faces two major constraints in the market:

- a) The competition of other firms in this same market, and
- b) The aggregate rate of expansion in that market.

In case of the former as firm expands its activities in any market, it may affect the growth of other firms in the same market. In latter case, if the total market is not expanding, a firm may follow a policy of price competitor. If for any reason, a takeover is not possible or is not desirable and destructive price war is to be avoided, an expansionist firm then may seek to fulfill its aims of growth by diversifying into another market.

So far as the size and growth of firms is concerned, diversification may take place, if there is a rapid rate of technological change in any field of business. For example, as a result of the impact of the application of modern technology in automobile, Maruti firm started facing competition from Tata firm. Maruti, in order to maintain its growth, has entered the production of multipurpose vehicles and brought new product in medium and luxury segment of cars. As a result, firm's sales and size increase. The strategy of diversification for growth has to be stimulated by the firm in such a way that it must reach its maximum rate of expansion in its chosen field.

With the liberalization of economy, the decades old monopolistic environment of the Indian automobile industry where only a handful of vehicle models were available with a long waiting list, gradually gave way to a highly competitive, complex and rapidly changing market which was not limited to domestic market alone. Today the number of vehicle models available are more than hundred and not a month goes without offerings of newer and more advanced model. Today the market is customer driven with performance, cost, fuel economy and reliability being the key drivers.

It is understood that technological innovation has completely changed the outlook of automobile industry to-day. As a result, growth has rapidly taken place in the industry. Many firms have entered in the industry and with different models of vehicles enabling the customers to buy products of their choice.

Chapter - V

Market Structure of Automobile Industry

Chapter – V

MARKET STRUCTURE OF AUTOMOBILE INDUSTRY

In the previous Chapter, Technological innovation and growth of the automobile industry has been analysed. The object of this Chapter is to study the relationship between the market of the industry and growth of automobile firms. This Chapter contains the analysis of market structure and performance of various firms of the two and four-wheeler segments of the Indian automobile industry in terms of production, sales and exports during the past decade or so. This Chapter looks into the factors that boost the demand for vehicles in all segments. It also attempts to analyze the degree of market concentration and competition at the level of the firm in the industry. The major impact on the industry and across the segments is discussed in detail. Further, the Chapter seeks to examine capacity utilization of major players in the industry. MUL has been taken as a case study. The purpose of this Chapter is also to analyze the determinants of the growth of the firms.

5.1 MARKET STRUCTURE

Market structure implies the pattern in which the different constituents, i.e., sellers and buyers are linked together. Caves (1967) observes that market structure refers to a selected number of organizational characteristics of a market that establish inter-relationships between buyers and sellers of a particular product. Market structure analysis, therefore, attempts an examination of the organizational features of a market that are believed to have significance for the conduct and performance comprising the market.

We begin with the question: how far is it true to say that the market structure plays an important role in the growth of firms? Caves (1967) has suggested that the market structure determines the behaviour of firms and that

behaviour, in turn, determines the quality of the industry's performance, which reflects the size and growth of the firms.

Bain (1968) has suggested the following four main features of market structure, namely.

1. **Degree of Sellers Concentration** : This indicates the number and size distribution of firms producing a particular commodity or types of commodities in the market.
2. **Degree of Buyers Concentration** : This relates to the number and size distribution of buyers for the commodities in the market
3. **Degree of Product Differentiation** : This denotes the difference in the product of different firms in the market.
4. **Condition of Entry to the Market** : This refers to the relative ease with which new firms can join the category of sellers (i.e., firms) in the market.

Each of these four different dimensions or features of the market structure is important in determining the growth of the firm, which, in turn, affects the performance of the industry as a whole. We will consider in detail product differentiation and condition of entry barrier in other Chapters of the study because they constitute important elements of market structure that affect the size and growth of firms. We now turn to the structure of Indian automobile firms.

The following are the major automobiles of manufacturers in India

- (1) Maruti Udyog Ltd.
- (2) General Motors India
- (3) Ford India Ltd.
- (4) Eicher Motors
- (5) Bajaj Auto
- (6) Daewoo Motors India
- (7) Hero Motors

- (8) Hindustan Motors
- (9) Hyundai Motor India Ltd.
- (10) Royal Enfield Motors
- (11) Telco
- (12) TVS Motors
- (13) Mahindra & Mahindra
- (14) Swaraj Mazda Ltd

5.2 MARKET STRUCTURE: AUTOMOBILE INDUSTRY

The automobile industry comprising the automobile and the auto component segments have shown great advances since delicensing and opening up of the sector to foreign direct investment in 1993

The Indian automobile industry has undergone transitional phase and has affected all the segments of automobile. This transition has been necessitated by the entrance of international companies accompanied by the infusion of modern technology. At present, all segments in the industry do face challenges on account of either over supply, price wars or a shift in consumer preferences. This is being felt more intensely in the passenger car segment than in other segments of the industry. Until 1981, there were two dominant players in the Indian scene – Hindustan Motors and Premier Automobiles. In 1983, Maruti Udyog, a joint venture between Suzuki motors and the Indian Government, introduced a hatchback car at an affordable price. Gradually, Maruti introduced three new models, creating three different segments and overtook HM and PAL with attractive prices and fresh designs. By 1988, Maruti controlled 84 per cent of the Indian car market. The Maruti 800, Omni and the Zen dominated the compact segment while HM and Maruti Esteem accounted for the mid segment. Peugeot and Daewoo Cielo entered the market as premium cars but were unsuccessful in supporting the segment. Peugeot exited the same year while the Cielo has repositioned in the mid segment with a 20 per cent price cut.

India has a sizeable market of two and three wheelers, besides a strong commercial vehicles and four-wheeler market. The two-wheeler segment leads the industry with a big share of around 80 per cent, followed by passenger cars with a market share of 14 per cent, commercial vehicles and three wheelers with a share of 4 per cent and 3.9 per cent respectively. The two-wheeler segment continues to dominate the auto sector due to the growing number of middle-class consumers. The growth in the two-wheeler segment is mainly driven by the growing younger generation. Price discounts, attractive and easy finance schemes, and the launch of new models at frequent intervals have all helped this segment increase its share from 77% in 2004 to 79% in 2005. Hero Honda, the market leader in the two-wheeler segment, retained its 'world no. 1' tag for the 5th year in a row by selling a record number of more than 29 lakh units, registering an average growth of 24.6% over the past five year period. Consistent innovations in product development, distribution, after-sales service and consumer relationship management helped the company maintain its leadership. For instance, Hero Honda company has introduced three models in the year 2005—Super Splendor, Glamour, and Achiever – and for the first time entered the scooter segment with 'Pleasure' which was launched into the market early 2006. Bajaj Auto followed Hero Honda with a market share of 28% in the two-wheeler segment for the financial year 2005, compared to 24% during the previous year. The other major automobile manufacturer, TVS Motor, however, is losing ground. The company, in spite of releasing several new models, has been maintaining a growth of only 2%. However, its Victor model is doing well and has crossed the one billion mark in sales during the said fiscal year. The scooter segment, in general, after an insignificant performance for two consecutive years from 2000 to 2003, is emerging as the second most attractive segment among two-wheelers with the launch of sophisticated models. The sale of scooters saw a robust growth of 13% for financial year 2005, compared to 10.5% of the previous year.

For the passenger car segment, the year 1997 was a landmark as the production (including MUVs) scaled one million market. It posted a growth of

17% during the financial year 2005. A good part of the growth came from the mid-sized and luxury segments, while sales in small car segment declined due to consumers' shift to other segments. The demand for the passenger car segment can be attributed to attractive finance schemes being offered to customers and also due to rise in disposable incomes. Maruti Udyog Ltd. continued to dominate the segment with a share of 50.9% followed by Hyundai Motor India Ltd. with around 20% while General Motors India, Skoda Auto India; and Toyota Kirloskar are making inroads. The new launches—Maruti Swift and Toyota Innova—received good response from the customers.

The commercial vehicle segment notched up robust growth during the nineties due to the low-cost finance facilities as also availability of freight, with Medium and Heavy commercial vehicles (M&HCVs) segment witnessed a 5.5% growth. The Light commercial vehicles (LCVs) registered a 19% growth during this period. Tata Motors garnered huge sales due to the impressive performance of 'Ace' in the mini truck segment. Telco and Volvo continued to dominate the commercial vehicle segment in the road transport industry.

The auto industry is expected to grow faster in the near future. In a bid to make India the automotive hub of the world, the Government of India is expected to grant special economics zones status and is re-looking at the tax structure for setting up testing centres and manufacturing plants. Encouraged by these initiatives global auto giants like General Motor, Ford and Hyundai, are expanding their operations while others like BMW are planning to set up their base here.

5.3 TRENDS IN GROWTH OF FIRMS IN TERMS OF SALES

In this analysis, the growth of firm is defined in terms of rate of change in the annual sales turnover of Indian automobile firms during the periods 2001-02 to 2005-06.

The automobile industry has witnessed remarkable growth in all the segments of the automobile industry. The table given below illustrates the growth rate of different segments of the industry. The sale of all passenger cars including utility vehicle has increased from 675116 lakh units in 2001-02 to 1143037 lakh units in 2005-06 indicating a growth of 69.34 per cent. The sale of commercial vehicles grew by 139.09 percent to 350683 lakh units in 2005-06 as compared to 146671 lakh units in 2001-02. Similarly, the sale of two-wheelers increased by 67.85 to 7056317 lakh units in 2005-06 as compared to 4203725 lakh units in 2001-02. The total number of vehicles sold has jumped from 5225788 crore units in 2001-02 to 8910224 crore units in 2005-06 registering a growth rate of 70.50 percent during the above period.

Table 5.1 : Automobile Domestic Sales Trends

(No. of Vehicles)

Category	2001-02	2002-03	2003-04	2004-05	2005-06
M&HCVs	89999	115711	161395	198506	207446
LVs	56672	74971	98719	119924	143237
Total CVs	146671	190682	260114	318430	350683
Passenger Cars	509088	541491	696153	820179	882094
Utility Vehicles	104253	113620	146388	176360	194577
MPVs	61775	52087	59555	65033	66366
Total Passenger Car vehicles	<u>675116</u> ①	707198	902096	1061572	1143037
Scooters	908268	825648	886295	922428	908159
Motorcycles	2887194	3647493	4170445	4964753	5815417
Mopeds	408263	338958	307509	322584	332741
Total Two wheeler	4203725	4812126	5364249	6209765	7056317
Three Wheeler	200276	231529	284078	307862	360187
Grand Total	5225788	5941535	6810537	7897629	8910224

Source : SIAM

Current Automobile Domestic Sales

The units of commercial vehicles sold grew by 10 percent to 350683 lakh units in 2005-06 from 318430 lakh units in 2004-05. The sales of passenger cars including utility and MPVS increased by 7.67 percent in 2005-06 as against 1061572 lakh units in 2004-05. There has been sudden spurt in the growth of automobiles in India due to the improvements in the number of middle income group people. The two wheeler sector has shown remarkable growth in its sales. However, scooter has indicated negative sales. The sale of motorcycle has registered in 2005-06 an increase of 17.13 percent to 5815417 crore units as compared to 4964753 crore units in 2004-05.

The sale of two-wheeler has merely reflected the way the market has developed over the recent years. Hero Honda is the largest producer of motorcycle. However, Bajaj Auto which is the one of the largest producers of two-wheelers in the country has been able to achieve a production of 1.8 million vehicles with manpower of 10, 914 in 2004-05 as compared to 1.5 million vehicles in 2003-04 with manpower of 11,531. Many companies like Honda and Scooters India Limited are beefing up their production capacities to reach a target of around 300,000 per year.

Though the metal geared scooters have fallen out of favour of the Indian riders' this fact is reflected in production during the early 2006. The lingered segment of scooters has shown positive growth by over 13 percent in 2004-05. Thus during the production, Bajaj Auto has shown an over whelming presence in this segment and produced 742000 lakh units during 2004-05 but it has cut down the production of scooters from the year 2005-06.

From the table it appears that the rate of growth of motorcycles, passenger cars and commercial vehicles in liberal policy regime has been very tremendous. It re-examines certain issues that have already been extensively studied in the literature, such as the relationship between growth, size,

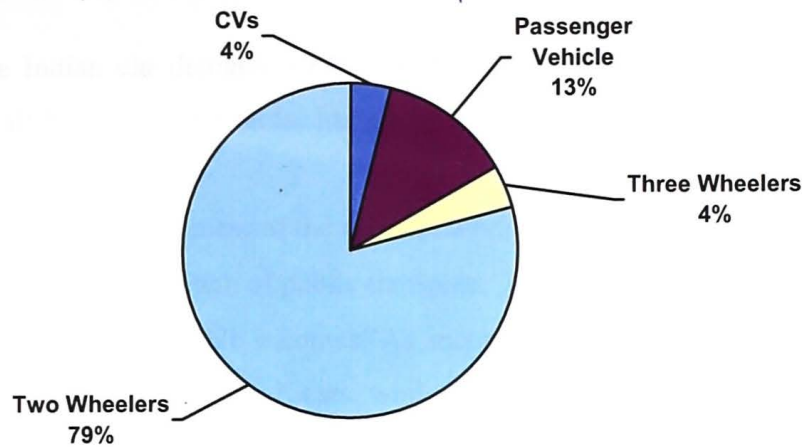
technology, market share, net sales and profitability of firms in Chapter VII. These changes dispensed with the bulk of controls and regulations and for the first time, since independence assigned a central role to market forces. The automobile industry in India, as a result of the liberal policy, witnessed a number of new entrants during the early 1990s. Entry of firms, mostly with foreign capital and technology, threatened the market share and the rate of growth of most of the veterans in the Indian automobile industry. Foreign direct investment, resulting in transfer of latest technological configurations to produce / assemble vehicles involving technological up-gradation, raised serious questions about sustainability of growth in the already existing firms.

The main motivation for the analysis of growth is provided by two major developments in the Indian automobile sector during the last decade (a) 1990's, liberalization in the Government policy measures resulting in entry of firms with expanded capacity and capability to produce vehicles involving technological up-gradation, and (b) massive inflow of direct foreign investment into the automobile sector. Both these developments have important implications for the performance of individual firms.

To summarize, there were large variations in the growth rates of individual firms. Most of these variations in the growth rates could possibly be due to changes in the policy framework in which the firms have been operating and its impact on the conduct of firms.

Market Share for 2005-06

CVs	3.94
Passenger Vehicles	12.83
Three Wheelers	4.04
Two Wheelers	79.19



The above chart shows that the automobile market is dominated by the two-wheeler segment with 79.19 percent followed by passenger car with 12.83 percent.

5.4 CHARACTERISTICS OF DOMESTIC CAR MARKET

The domestic car market can be divided into three segments

- The budget car segment – represented by small engine capacity cars such as the Maruti-800, Maruti-Omni, Premier Padmini and Ambassador. The target groups are those families with an annual income of more than Rs. 0.1mn.
- The medium car segment- consisting of semi-luxury cars priced in the range of Rs. 0.25mn. to Rs.0.35mn. This segment was introduced some years ago with launches of PAL 118NE, Contessa Classic. The target groups are people with an annual income of more than Rs.0.5mn.
- The large/ luxury car segment – this comprises luxury cars with bigger engine capacity and modern technological features. This segment included models like the Mercedes E series, Tata Sierra, and Tata Estate. The target group is the super-rich class with annual income of more than Rs.1mn. This income class is estimated to be 0.5mn. (As per FY1995 estimates).

The Indian car demand, (0.7% of the global sales) in recent years, though small by global standards, has been growing rapidly. This is mainly due to

- Growing awareness of the need for a better means of transport.
- Inadequate growth of public transport.
- Rise in disposable incomes. As incomes grow, people using two wheelers shift to small cars, while entrepreneurs are buying luxury cars as status symbols.
- Increased availability of consumer finance
- Availability of models suited to the Indian road conditions and within the reach of customers.

5.5 SEGMENTATION OF THE PASSENGER CAR MARKET

Price and income are the most significant factors contributing to the purchasing decision of a car buyer, and these can be used as an effective segmentation variable for analyzing the passenger car market. The other significant variables like technology, comfort, usage, status associated with brand and benefits that the car offers, also have a role in market segmentation.

The passenger car market can be broken into three broad segments

- The Small-car segment – price below Rs. 4 lakhs
- The premium segment – priced between Rs. 4 lakhs and Rs. 8.0 lakhs
- The luxury car segment – period above Rs. 8 lakhs

5.6 THE SMALL CAR SEGMENT

This segment has been dominated by Maruti Udyog Limited (MUL) for over 14 years now, is also the fastest growing segment in the Indian passenger car market. Of the other existing competitors in this segment, PAL has now moved out of the segment, being unable to generate sales for its

Table 5.2 : Production of Passenger Cars

Year	Car (In thousands)	Growth rate in percentage
1995-96	417800	-----
1996-97	506300	21.18
1997-98	518000	2.31
1998-99	493600	-4.71
1999-00	733600	48.62
2000-01	690600	-5.86
2001-02	500301	-27.55
2002-03	557410	11.41
2003-04	782562	40.39
2004-05	960487	22.73
2005-06	1045881	8.89

Source : SIAM

There has been sudden spurt in the production of passenger cars due to high economic growth of Indian economy except in 1998-99 and in 2001-02. From the table, it is clear that the growth rate of passenger cars has been fluctuating due to recession in the economy or changes in excise duty and overall economic growth of the economy.

Major global players of automobile have already decided to enter in the segment of small cars. Suzuki, for instance, will develop India as a R & D base for developing new models of cars by 2007. Swift is Maruti's first car designed jointly by company's designers in India and Suzuki's designers in Japan. This India is becoming a hub for small cars.

5.6.2 The Competitive Phase: Post 1993

The recession in the automobile industry in the early 90s due to various factors like increase in petrol and diesel prices, high interest rates, high excise duty and depreciation of the rupee saw a significant fall in demand with sales

coming down by 37 per cent. The delicensing of the industry in 1993 and liberalizing of the foreign investment norms saw the entry of a large number of international players which transformed the dynamics of the industry completely.

The Korean auto major, Daewoo was one of the first to enter the industry in 1995 as an outcome of the liberalization moves. Peugeot, Ford, General Motors and Mercedes Benz were quick to follow with almost all of them taking the joint venture option to set up operations in India. From a supply driver industry, the passenger cars segment of the industry increasingly saw innovative technology and marketing skills emerged as formidable dimensions of competition in the new environment. The easing of restrictions and simplification of procedures saw sales increase at a rate of 25 to 35 per cent per annum thereafter. The several joint ventures signed between foreign majors and domestic players buoyed up the demand on the one hand and increased competition level on the other. The premium segment of the car market which was virtually non-existent till the early 90s witnessed crowding by some of the new players and changed significantly.

5.6.3 Market Expectation Went Wrong

Most of the manufacturers brought cars having engine capacity of 1300 cc or above were quite costly for an ordinary combined with the uncertain political conditions kept the market demand very low. After realizing the need of Indian car buyers, most MNCs have entered into small car with low cost. The entry of MNCs is definitely a big boom for the average Indian car buyer. The customer is getting the best technology on a par with other developed countries. The service he gets has also undergone a qualitative change. As the products he gets are quality assured, the frequency of visits to the service station has come down.

In today's market, the customer has a wide choice of products. The advances made in the field of information technology, print and electronic

media have led to increased awareness among customers about international quality standards. Indian buyers have also become more knowledgeable.

5.6.4 Intensity of Competition

The passenger car industry in general is seeing an increasingly intense form of rivalry amongst the competing firms. Strong backing from the overseas parent firms in terms of access to technology and financial muscle, should see the industry proliferated with a host of product introductions in the next few years. In addition, the saturation in the home markets for most of these MNCs has made it imperative for these firms to find high-potential growth areas for their products.

The small car segment is yet to heat up, but if all the new launchers are able to match the price offered by MUL for its small cars, the small car segment should see some cut-throat competition from the manufacturer's perspective and a bonanza from the consumer's perspective. Competitive moves by new entrants in this segment are likely to be centered on offering of superior product features and innovative technologies at a reasonable price.

Lack of differentiation and slow growth in the much sought after premium segment have made things difficult for a lot of firms. However, long term potential in the Indian market combined with the possibility of using India as a low cost manufacturing base is probably making these MNCs use the parent firm's backing to sustain its operations in India.

5.7 MARUTI UDYOG LIMITED: A REVOLUTION IN THE INDIAN CAR MARKET: A CASE STUDY

Maruti Udyog Limited was set up as a 74:26 Joint Venture between the Government of India and Suzuki Motor Corporation in 1983-84 to revive the Indian automobile industry which had been beset with outdated technology and unimaginative product development. The Government of India's direct

interest in the joint venture gave a huge fillip to the automobile industry in general and the passenger car segment in particular. The plant set up at Gurgaon, near Delhi had an initial investment in 1983 of Rs. 260 crores. It has an installed capacity of 350,000 vehicles. However, the company, through productivity improvement initiatives, would easily be able to produce 500,000 vehicles with its existing facilities. It was incorporated to meet the growing demand for a personal mode of transport caused by the lack of an efficient public transport system.

MUL created history by going into production in a record 13 months. Maruti 800 was the first car that was launched in 1984. The car had an engine capacity of 796 cc, high fuel efficiency and the pricing was extremely competitive. The various excise concessions and other benefits handed out to the car helped the company price it at Rs. 0.53 lac which was significantly lower than the products offered by HM and PAL. Over the last 10 years, MUL has launched various models such as Omni, 1000, Zen, Esteem, Wagon R, Gypsy, Alto, Baleno and Vitara, targeting all segments of the customers.

5.7.1 Products and their Performance

Maruti 800 : The most successful and largest selling model in the industry, Maruti 800, was introduced in 1984-85 Priced at Rs. 53,000, and offering superior technology. It was positioned as the 'people's car meant for the average middle class family. Today it commands a staggering 65 per cent of the total automobile sales. It is the company's cash cow and earns approximately half of the company's revenue.

Maruti Omni : Maruti Omni was also introduced in the mid 80s as a multi-purpose vehicle. It offered more space and combined the features of utility vehicles like jeeps with the aesthetic appeal of a passenger car. Safety considerations (limited protection to driver and front seat) and lack of clear positioning has stilled the sales for this product even though it continues to be produced by the company. Recent revamp of the model in 1996-97 with more

seating space has seen demand pick up a bit but sales still remain disappointing.

Maruti Gypsy : Gypsy was introduced as utility vehicle in the mid 80s. It has about a 7 per cent market share in the utility vehicle segment where it faces stiff competition from the market leader Mahindra & Mahindra. It is exported to Latin American countries as a farm vehicle.

Maruti Zen : Suzuki's international model was named by Maruti as Zen for the Indian market. This was introduced in 1993 and it was then in the premium segment. It proved to be a successful product with superior technology, It suffered from size comparison with Maruti 800 as higher price for similar looks were not acceptable to the image-conscious car buyer. It was largely targeted at the export market in Europe and it is only now that the domestic sales are picking up.

Maruti Esteem : Esteem was introduced in the early 90s. This model proved to be a big hit in the Indian market. Initially christened Maruti 1000, the later models came to be known as the Esteem. It was the first car introduced in what is today's premium segment of the car market. It was positioned as a superior alternative for the car buyer who was upgrading from the small car segment and who demanded exclusivity. It has attained market leadership in the premium segment, but of late, its market share has been declining due to entry of new players.

The high degree of confidence reposed by the consumers in passenger is reflected by the high market share that the company commands. Notwithstanding the lack of competition, MUL vehicles are seen as 'value-for-money' and the best available in the respective price ranges. A strong, well developed vendor base assures quality inputs at best possible prices. The high premium commanded by its products makes a significant contribution to MULs working capital requirements.

5.7.2 Alternative Compact Car Segment

The small car segment has always become the high growth segment of the Indian automobile market and in many ways reflects the Psychographics and demographics of the car purchasing population in India. Indian consumers now want the latest technological and functional features in such cars and are not ready to wait for long to get the latest models from foreign car manufacturers. The eight percentage point cut in excess has revitalized this important segment even more and up avenues and growth prospects for the new players in the vast rural India. India is on its way to becoming a global economic powerhouse in about a decade. It is also one of the fastest and most exciting automobile markets in the world. It is not surprising at all that almost every global automobile manufacturer is today keen on entering the Indian market.

Introduction of new models MUL is planning to introduce new models, including diesel versions of Zen, Gypsy and Esteem and Swift. Suzuki Motor Corporation has developed a range of new prototypes of 800 cc car specifically for the Indian market with four-valve engine technology that could replace the existing 800 cc car.

5.7.3 Wide Product Portfolio

MUL with 10 models in the market has a car for almost every kind of customer. MUL is the only player in the Indian industry with a presence in all the segments of the market, thus enabling the company to cater to a wide range of customers.

Brand	Segment	Capacity	Launched in
M800	A	796	Dec-83
Omni	A	796	Nov-84
Alto	B	796 / 1061	Sep-00
Wagon R	B	1061	Dec-99
Zen	B	993	May-93
Baleno	C	1590	Dec-99
Esteem	C	1298	Nov-94
M1000	C	1000	Apr-92
Versa	C	1298	Oct-01
Gypsy	UV	1298	Dec-85
Vitara	UV	2700	Apr-03
Swift	B	1298	2006

Source: Company

5.7.4 Declining Market Share

MUL has been losing gradually its market share since 1999-2000 with the entry of new players like Telco, Hyundai and Daewoo; General Motors and others. However, it is believed that market share will stabilize at current levels. New launches by MUL slated over the next few years and high growth in 'A' segment, especially in the smaller towns and cities, will enable MUL to restrict further market share erosion.

The lack of diesel variants in its models has restricted MUL's growth in the second largest B segment. An estimated 33% of cars sold in the B segment are diesel models. To address this concern, MUL has launched diesel models like Swift and Esteem and new Zen. However, it is believed that the lack of presence in diesel segment will not be a major deterrent in the future, as:

- a) The price differential between petrol and diesel has gradually diminished and is likely to be almost non-existent within 2-3 years.
- b) Diesel variants are more expensive in terms of initial cost as well as maintenance cost.
- c) Diesel cars have lower resale value.

Due to the above facts, it is expected that over a longer period of time, consumer's preference, especially in the price sensitive compact segment will again move towards petrol versions.

The global car industry is estimated to be valued at around 38mn cars and US\$700 bn in value. The highly penetrated markets of US, Europe and Japan have witnessed a slowdown in demand growth during the last three years due to economic slowdown. Most auto majors globally have therefore set their sight on the low penetrated markets in developing economies.

5.7.5 Potential Threats to Maruti 800

- i. *Matiz from Daewoo* Launched in November 1998 was the earliest of the challengers to Maruti 800. Priced at about Rs. 3.5, Matiz differentiates itself on size (spacious interiors), a technologically superior engine and consequently fewer servicing problems. Fuel efficiency and engine power and better product features are other differentiating factors that Matiz is selling itself on.
- ii. *Santra from Hyundai* With a price of around Rs. 3.5 lakhs. Hyundai competes as a technologically superior product as in the case of Matiz and better product features. The company offers 'value for money' to the increasingly discerning Indian car consumer.
- iii. *Indica from TELCO* Matches Maruti 800 on price (well almost) and the Zen on power and performance. The only 'indigenously manufactured car' from the Indian automobile major is the domestic industry's response to the growing car market. With

strong presence in other automobile segments, TELCO plans to leverage its existing marketing infrastructure to support Indica.

- iv. *Corsa from GM* Likely to be launched in 1999, might be positioned at below Rs. 2.5 lakhs to undercut Maruti 800 and Indica or just below Rs. 3.5 lakhs to undercut Zen and other models in that range.
- v. *Palio from Fiat* is again a 'state-of-the-art' offering which plans to repeat its overseas success in India.
- vi. *Fiesta from Mahindra Ford* With a jazzy, bubble shaped look, Ford plans to replicate its success in US with a launch in 1999 in India.

5.7.6 The Premium Segment

This segment which is so defined by current Indian affordability standards is really the 'Bread and Butter' segment as far as worldwide experience goes, with these models introduced in the segment. Almost all the new entrants have chosen this segment for their entry into India. One of the primary reasons for the choice of this segment is the inability to compete with MUL in the small car segment, given MUL's cost and incumbency advantages. In addition, most of the mid-size models introduced in this segment are tried and tested products for these auto majors. But growth in this segment has been far below expectations for most of the players because of overall economic slowdown in 1997-98 and overcrowding of the segment, with too many players chasing too little volumes. In addition, these auto majors also seem to have underestimated the price sensitivity of Indian consumers who have shown their preference for the low priced small-car segment.

Mercedes, Ford, General Motors, Honda and Mitsubishi have all launched Premium cars priced at over Rs. 7 lakhs, and compete in a very narrow market of about 20,000 cars annually. The Premium car segment was

chosen by the new entrants as part of a 'market entrance' strategy to create brand awareness.

Almost all the entrants now have clear plans of introducing new products in the mid size segment as a step towards capturing volumes to make the business viable. Some companies like Ford and Hyundai have also their goals set for entering the small car market in the long run.

5.8 EMERGING TRENDS IN THE MARKET

Overcrowding in the premium segment and investment in the premium segment by a large number of foreign players is likely to result in sub-scale capacity utilization at individual company level. Intense competition and aggressive pricing combined with lower profitability might lead to a shakeout in the premium segment with some of the players changing their target segment focus.

New entrants into the small car segment are likely to try and offer more 'value' for money leading to blurring of old segments and creation of new segments/sub-segments. Innovative marketing and after-sales service Concepts such as direct marketing and multi-franchise dealerships are likely to be explored. On the repairs and service front, apart from revamped full-functional workshops, companies are likely to look at mobile repair services as a means of introducing personalized service to the customer.

Table 5.3 : Global Penetration statistics:

Country	Cars per thousand population
USA	800
Japan	700
Bangladesh	14
Sri Lanka	12
India	7

Source: Industry

Car per thousand populations in India is only seven as compared with advanced countries. It implies that there is huge market for cars in India. The growth of passenger car in China has been remarkable. For instance in China, the passenger car market has doubled in size during the last two years. Chinese car sales have grown from 0.6mn vehicles in 2000 to 1.1mn vehicles in 2002. This growth has been largely driven by factors such as lower import duties on imported cars, reduction in car prices by local manufacturers, entry of new foreign players in the country through joint ventures, etc.

5.9 THE INDIAN PASSENGER CAR MARKET IN FY 2002-03

Industry Segments	By Size	Sales Volumes	% share of Segment
A	Compacts	195366	28%
B	Mid-sized	375292	53%
C	Premium	130983	18%
D & E	Luxury	6437	1%
	Total	708078*	100%

Source : SIAM

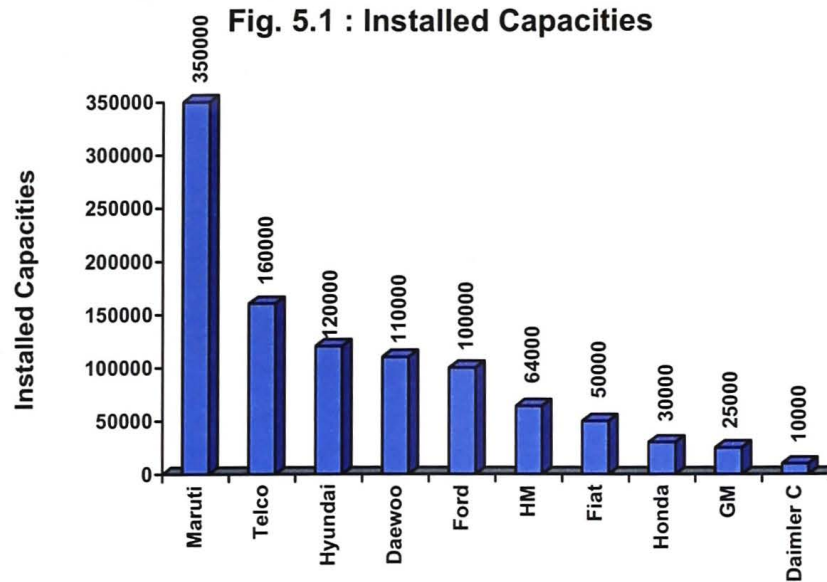
* Includes MUV's/SUV's

Table 5.4 : Major Players in the Indian Market:

Companies	Installed Capacities	Utilization %
MUL	350000*	102%
Telco	160000	58%
Hyundai	120000	78%
Daewoo	110000	-
Ford	100000	10%
HM	64000	36%
Fiat	50000	-
Honda	30000	34%
GM	25000	33%
Daimler C	10000	14%

Source : SIAM

- MUL can manufacture 500,000 vehicles at existing facilities

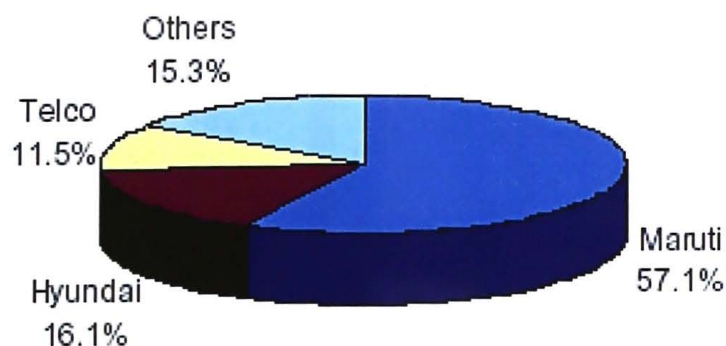


It can be observed from the above table and above chart that MUL is the only automobile firm is operating with highest installed capacity and capacity utilization. *

5.10 THE MARKET LEADER

Being the dominant player in the industry, MUL's market share was bound to decline post entry of new players in the late '90s. The ongoing imbroglio between Suzuki and the Government, during the same period, further impacted MUL adversely as new launches got delayed. As a result MUL saw its market share dwindle sharply during 1998 to 2000. However, MUL still remains the leader in the Indian car market with a market share of 57 %. The company has sold 362,426 vehicles in 2003, which is more than the combined volumes of all players put together. In 2005-06, the market share of MUL has further declined to 42 percent

Fig. 5.2 : Passenger Car Market Shares : 2002-03



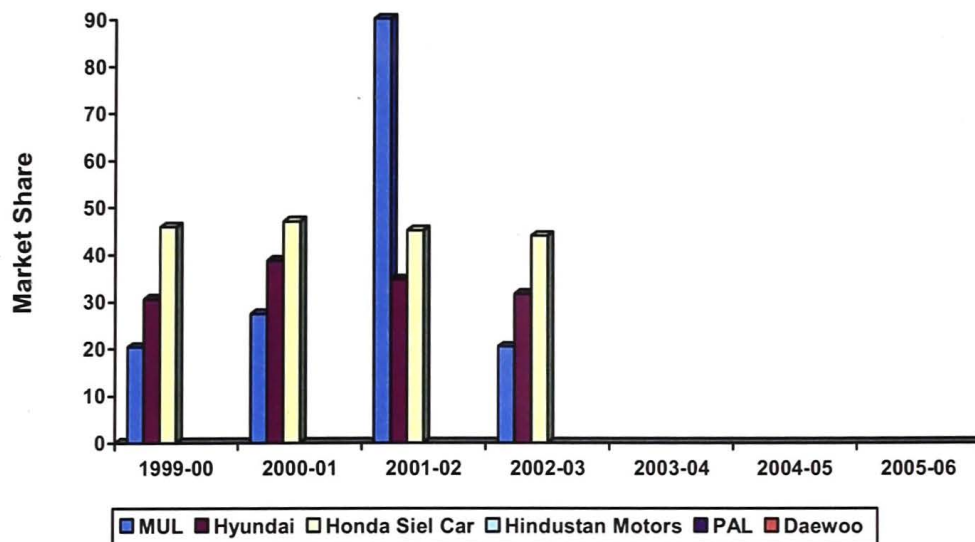
MUL sold cars of Rs.8770 .60 crore in 1999-00 which rose to Rs.13081.96 crore in 2005-06 indicating a rise of 49.15 percent. Hyundai has registered increase by 250.89 percent to Rs.7867.72 crore in 2005-06 from Rs.2242.19 crore in 1999-00. It indicates a spectacular rise in the sale of Hyundai. It has introduced several models. The customers have shifted their loyalty to Hyundai. The firms which make significant contribution has taken into consideration for the study.

Table 5.5 : Trends in Market Shares: 1999 - 2000 to 2005 - 06

Name of Firm	1999 - 2000	2000 - 2001	2001 - 2002	2002 - 2003	2003 - 2004	2004 - 2005	2005 - 2006
Maruti Udyog	52.10	48.17	47.21	44.47	44.72	40.22	41.57
Hyundai Motor India	13.32	17.02	18.45	19.99	23.20	25.34	23.70
Tata Motor	9.44	1.34	10.96	11.42	11.91	14.62	13.59
Honda Siel Cars India	3.73	4.03	4.61	4.93	2.59	5.54	8.82
Hindustan Motors	6.94	6.50	4.88	4.45	2.59	2.93	1.90
Premier Automobile Ltd	0.11	0.01	-	-	-	-	0.02
Daewoo Motors India	6.11	5.71	1.38	1.28	-	-	-
Maestro Motors	0.01	-	-	-	-	-	-
Total for the above companies	91.76	88.79	87.49	86.55	88.82	88.67	89.60
Total for the sample 12 companies	99.67	99.75	99.75	98.76	100.00	100.00	100.00

Source : Industry : Market size and share (CMIE) various issues.

Fig. 5.3 : Trends in Market Shares: 1999 - 2000 to 2005 - 06



The above table indicates that the market share of MUL has declined from 52.10 % in 1999-00 to 41.57 % in 2005-06. This is basically due to the entry of Hyundai, Tāta and Daeweoo in the segment of small car. But it is also significant to note that despite of the entry of global and domestic players, Maruti even to-day has got the highest share in the car segment, followed by Hyundai with 23.70 percent, Tata motors with 13.59 in 2005-06.

5.11 STRUCTURAL DETERMINANTS OF THE PASSENGER CAR INDUSTRY

5.11.1 Buyers

The passenger car in India is still not perceived as a need-based product. The price of the car as a proportion of the income is still quite high. Therefore the buying process is quite ‘involved’, with the buyer going through a complex decision process wherein he trends to evaluate all the available products/ (choice) that he can possibly afford. Apart from being a substitute for the increasingly crowded and user-unfriendly public transport systems in most cities and towns, the car is seen as a status symbol for an average image-conscious middle class person in India. It is seen to announce his social and

economic success and herald 'his arrival' as an upwardly mobile person, as he follows the typical trajectory from owning a scooter to a 'small car' to multiple cars or a larger premium end car.

Rising incomes of the middle class and changing attitudes and lifestyles in terms of willingness to spend for comforts are critical factors influencing the purchase of passenger cars. Strong influencing factors in the buying process include price, established brand name, after sales service, availability of spares, operating costs, perception of technology and quality associated with the product (and the company)

More often than not, the purchase of the car is supported by loans and financial schemes initiated both by car manufacturers as well as third party financial service providers which are easily available now. The increasingly creative and attractive finance schemes for cars have given a major boost to the car sales as they provide a viable alternative to personal savings for purchase of a car. The car financing market increased from a turnover of Rs.7,000 million to Rs. 35,000 million. Beside the jump in quantum of financing, the car financing market has also seen a significant degree of sophistication and value addition in terms of services provided and the flexibility offered to the prospective buyer. Examples of this kind of value addition and flexibility in financing schemes include car swaps, financing for second-hand cars and lowering of EMI's and have contributed to hastening the car buyer's decision process.

Notwithstanding the above factors which are common and applicable to all the segments of the car market, the bargaining power of buyers varies across segments, depending on which segment one is taking about.

- i. The small car segment: which was dominated by (and virtually restricted to) MUL, thus far allowed restricted bargaining power to the buyer. The only choice that the customer had was in terms of choosing the colour and probably some accessories. This

scenario changed in 1998 with the entry of new players in this segment. As product variety increased and the key players in the market are now trying to outdo each other by offering innovative features and financial schemes supporting sales of their vehicles. Short term factors having a strong influence on sales include price, structuring of financial schemes and advertising success in terms of protecting 'value for money'. Long term factors supporting strong growth in this segment would include technological superiority and upgradation and width and depth of after sales service and support.

- ii. In the newly created premium segment, there is a large basket of choices with limited perceived and actual differentiation amongst the available products. Price and technological superiority is going to play a significant role in determining the structure of this segment. With limited possibility of strong growth in this segment, the consumer is likely to look for price-performance parity besides looks and style. Technology and service quality could become long term differentiators.
- iii. The luxury segment has a lot of snob value associated with it; a typical buyer is therefore not driven by a strong need-based influence but instead looks at the purchase more as a social status symbol. Price not being such a critical factor for this segment, the buyer typically looks at the 'exclusivity' associated with either the product (or the car company) when making his decision.

5.11.2 Role of Suppliers / Vendors

Prior to the early 80s the high level of Government intervention in the Indian car market served to keep demand low and unpredictable a policies shifted over time. This meant that the car manufacturers tended to make low-risk incremental investments. The 'protectionist' environment in the automobile industry hit the auto components industry just as badly, in terms of development of technological capabilities and manufacturing practices. Auto-

ancillaries had little incentive to invest in either capacity or technology, which led to a supply constraint for the car manufacturers, forcing them to manufacture critical components in-house. Dependence on external suppliers was limited, with only non-critical components being outsourced. This led to the bargaining power of suppliers being on the lower side.

With the entry of MUL on the mid 80s, the introduction of Japanese management techniques brought about a strong focus on incoming quality. With vendor capability development becoming a focus area, outsourcing as a paradigm came into being in the industry. Along with this came stronger manufacturer-supplier relationships, a high degree of emphasis on quality and delivery performance etc. which have altered the dynamics in the auto-component industry. The auto-component manufacturers have used these opportunities to develop their capabilities so as to enable them to compete at global levels. Sundaram Fasteners, an auto component manufacturer based in South India supplies radiator caps to General Motors (GM) which goes to highlight the big strides that some of the players in the auto-ancillary industry have taken in terms of improving their quality and cost levels.

Notwithstanding isolated cases of excellence in terms of manufacturing capabilities, the domestic auto-ancillary as a whole is not seen as a reliable and dependable source for supply by most new MNC entrants. The pace of development of the ancillary industries however, is likely to quicken with the entry of MNCs into the automobile market. Most of these MNCs have shown a preference for their worldwide suppliers in terms of getting them to set up manufacturing facilities in India. With the prospective entry of global auto component manufacturers like Delphi, the passenger car industry is likely to increase the percentage of components being outsourced by the auto industry as a whole. As a result of this, major improvements in quality and technology of the auto-components are likely to take place.

5.12 TWO-WHEELER: MARKET STRUCTURE

With 7.56 mn vehicles (including mopeds) sold in 2006, the Indian two-wheeler market is the largest market in the world after China. The two-wheeler market in India is growing on the back of rising middle class prosperity where as the global two-wheeler market is shrinking as more customers switch over to cars.

The two-wheeler market is divided into scooters, motorcycles and mopeds. The mopeds are at the bottom of the spectrum and motorcycles at the top end. The market is dominated by scooters of 100-150 cc category. However, the market share of scooters has been decreasing due to higher growth in the motorcycle segment during the period FY 1991 to FY 1997.

India is one of the largest two wheeler producers in the world. The two-wheeler segment has taken roots in India. BAL which started with collaboration with Vespa of Italy, has become the largest manufacturer of scooters in the world. India is the second biggest two-wheeler producer in the world. The outlook for the industry remains bright with penetration levels in India lagging the penetration levels in other developing countries. The per-capital availability of two-wheeler in India is one of the lowest in the developing world implying a huge latent demand.

5.12.1 Scooters

The age old metal bodied geared scooters may be heading towards a timely death in the country in due course of time, and then the silver lining, the age old set of two wheels could re-invent itself in the form of gearless-scooters. Kinetic Blaze by Kinetic motors and Honda Activa and Dio are an attempt by these two firms to retain a market share in the scooter segment which becomes a niche market with every passing day. Kinetic Blaze is one of the largest no of scooters to have travelled on the Indian roads. In terms of power it is only two Bhp less than the Bajaj Pulsar. Kinetic is pinning its hopes on this model to revive the sagging scooter market in this country.

Similarly Honda Eterno from the stables of Honda Scooters has been instrumental in reviving the geared scooter market in India. Eterno has a four stroke engine to counter the problem of fuel efficiency which the scooters face. It also has the highest ground clearance in its class for a smooth riding.

In the year 1959 Bajaj Auto had already acquired license from the Government of India to manufacture two and three wheelers in the country. It took, Bajaj a little over a decade to launch its' most successful model Chetak named after the horse of a legendary Rajput ruler. Not to be left behind the Lohia Mahicnery Limited or LML as it is popularly known had changed the face of scooters in India with its collaboration with Piaggio of Italy.

New models continued to evolve on the basis of technology, engine-power, electronic starter etc. For instance, LML introduced several new models with as many as 10 variants. It was followed by the entry of Honda, TVS Suzuku in the segment of scooter. Bajaj did not change its technology assuming that no one can beat Bajaj. But this approach proved to be wrong. People started gradually shifting from Bajaj to new firm which produced consumer friendly vehicle. The gearless scooter made by Kinetic Honda and Kinetic Engineering gave another kind of pleasure while driving such vehicle. As a result, a competitive market developed and Bajaj was seen shrinking its market share in the segment of scooter.

Until 1983, the active firms in the segment of two-wheeler, Bajaj Auto Ltd. were the only dominating player. In 1983, Indo-Suzuki, made its entry in two-wheeler. It was followed by Kawasaki Bajaj, Yamaha, and Hero Honda. The entry of these players brought the end of Bajaj monopoly.

The customers who wanted to buy Bajaj scooter had to wait three to four years. After the entrance of Japanese auto firms, the waiting period is over. Bajaj experienced excess supply of its vehicles and therefore Bajaj started giving loans to customers at reasonable rate of interest.

In the segment of scooter, Bajaj's share has declined, and it concentrated more on motorcycle. The market of scooter has been taken over by Honda, TVS Suzuki and LML

**Table 5.6 : Scooters
(Company-wise Trends in Market Share (in Percentage))**

Year	BAL	LML	Kinetic HM	MAH.S	TVS. Suz	Guj Nar. A	Vespa
1991-92	67.3	12.54	17.04	1.31	0	0.77	104
1992-93	50.06	21.23	13.24	13.37	0	0.66	0.09
1993-94	50.02	24.42	12.79	12.51	0	0	0.08
1994-95	53.34	25.6	11.83	9.27	0	0	0
1995-96	56.98	20.57	12.66	9.43	0.33	0	0
1996-97	55.02	22.05	11.75	10.59	0.56	0	0
1997-98	48.04	27.73	13.01	10.47	0.64	0	0
1998-99	48.04	26.36	9.82	10.21	6.21	0	0
1999-00	46.94	22.64	12.14	10.05	7.75	0	0
2000-01	44.53	16.77	17.44	9.18	12.07	0	0
2001-02	46.07	21.73	14.66	5.23	12.31	0	0
2002-03	36.72	7.84	14.25	2.98	14.33	0	0
2003-04	23.19	7.05	8.76	1.59	17.01	0	0
2004-05	11.46	4.96	4.97	1.08	17.69	0	0
2005-06	9.42	7.05	4.98	0.74	19.57	0	0
Total	647.13	268.54	1350.51	108.01	108.47	1.43	104.17

Source : Industry : Market size and share (CMIE) various issues.

It emerges from the table that BAL remained as a largest share of scooter from 1991-92 to 2002-03. Later on it concentrated on motorcycle. Now TVS is leading in the segment of scooter with 19.57 percent market share.

5.12.2 Motorcycle

Motorcycles have come a long way since they were first introduced in the country way back in 1950s. Today motorcycle companies are taking special care to make their products more users friendly, comfortable, and safe. Some bikes like the Hero Honda and Karizma can touch speeds upto 125 kmph, thus truly satisfying the riders for speed. Motorcycles have also invaded the Hindi film industry where Bollywood heart throbs like John Abraham,

Hrithik Roshan, Uday Chopra and Fardeen Khan are seen setting the roads on fire with their set of two wheels.

Thus the trend of motorcycles have caught up with the average Indian and there a bike to suit everyone's needs and usage. These motorcycles come with 5 speed gear box and disc brakes to provide one the extra throttle with the adequate safety measure. Kinetic Aquila the premium segment bike from Kinetic has headlamp that turns head with the bike thus making riding easier in the darkness of the night.

India has a burgeoning middle class who are conscious about value for money bikes like the Hero Honda Splendor, Bajaj Discover, Pulsar and TVS Victor have retained their importance with every passing day. These bikes are a hit among the office goers and small time business men who demand maximum output from their two wheelers. Motorcycles like the Hero Honda Splendor come in a wide range of colours and give an average mileage of 70 km per liter.

The entry level segment of motorcycles also has a cut throat competition with the two wheeler manufacturers. Some of the bikes which are available at the entry level include the Hero Honda CD Dawn, Yamaha Crux, TVS Star and Bajaj CT 100. The TVS motor company has posted strong growth due to the growing popularity of TV Star across all markets. TV Star has an engine displacement of 99.7 cc and claims to give an average of over 100 kmpl.

5.12.3 Hero Honda Motors Lt d.

Hero Honda CD-100 is the first four stroke motorcycle to be introduced in India in 100 cc range. Its most attractive features are fuel efficiency and its light weight. The company entered into a technical-cum-financial collaboration agreement with Honda Motor Co. Ltd., Japan (HML).

TVS-Suzuki Pvt. Ltd. Was converted into a public limited company on 12th January, 1984. It was promoted by Mr. N. Krishnan in collaboration with Suzuki Motor Co. Ltd., Japan: Sundaram-Clayton, Ltd., a member of the company to the extent of Rs. 70-lakhs.

The company entered into a technical know how and assistance agreement with Suzuki Motor Co. Ltd., of Japan on 22nd September, 1982. As per the terms of collaboration, Suzuki agreed to furnish complete technical information and know-how, trade secrets and other details.

The technical agreement entered into Suzuki Motor Corporation Japan, which ended in August 1991 was extended for three more years with the approval of the Government of India.

BAL and HHML, vehicles dominate the market with a 58% market share followed by Esecorts with a 22% market share. The share of BAL and TVS Suzuki has been improving in the market at the cost of HHML and Indian motorcycles. This was mainly due to capacity constraints at HHML, its restricted range and improved sale ability of TVS Suzuki's new models. HHML still dominates the 100cc segment. The acceptability of Indian motorcycles like Rajdoot, Yezdi, etc has also decreased.

Table 5.7 : Motor cycle

(Company-wise Trends in Market Share (in Percentage))

Year	BAL	HH	TVS> Suzuki	Escor. A	Eicher	Soor. A	Ideal. J	Escorts	LML
1991-92	28.99	31.92	7.99	0	0	0	0	31.1	0
1992-93	29.63	34.51	8.03	0	0	0	0	27.83	0
1993-94	26.66	31.03	10.94	0	4.09	0	0.55	26.73	0
1994-95	31.93	25.06	11.94	24.25	4.23	0.34	0.36	25.26	0
1995-96	30.06	26.46	14.01	6.13	4.02	0.41	0.07	0	0
1996-97	29.85	25.99	15.22	0	3.69	0.31	0.07	0	0
1997-98	30.08	32.01	16.33	0	2.06	0.03	0.06	0	0
1998-99	28.67	35.04	17.25	0	2.91	0.31	0	0	0
1999-00	22.47	42.19	15.86	0	2.38	0.25	0	0	0
2000-01	20.43	48.39	3.21	0	0	0	1.07	0.12	0
2001-02	21.81	49.01	2.16	0	0	1.38	1.41	0.08	0
2002-03	23.39	43.62	7.74	0	0	1.26	1.32	0.06	0
2003-04	24.3	48.08	3.99	0	1.17	1.13	0	0	0
2004-05	27.98	52.16	1.79	0	1.06	0.42	0	0	0
2005-06	32.03	50.35	1.48	0	0.98	0.35	0	0	0

Source : Industry : Market size and share (CMIE) various issues.

Hero Honda and Bajaj together control 83 % market share. These two firms introduce various models which enabled them to maintain a high growth rate.

5.12.4 Growth of Two Wheeler: Case study of Hero Honda and Bajaj

Table 5.8 : Growth of Auto Firms in Two-wheeler segment

Year	Scooters	Motorcycles
1995-96	1,199,543	760,931
1996-97	1,274,815	928,329
1997-98	1,231,432	1,085,976
1998-99	1,297,115	1,360,116
1999-00	1,233,781	1,761,439
2000-01	876,224	2,114,693
2001-02	908,268	2,887,194
2002-03	825,648	3,647,493
2003-04	886,295	4,170,445
2004-05	9235,66	4,964,442
2005-06	920,000	5,800,000

Source: SIAM

The numbers of Scooter sold in 1995-96 was 11, 99,543 which decline to 920,000. Scooter is loosing its marks. The numbers of motorcycle produced was 76093 in 1995-96 has accounted for 5,800,000 in 2005-06 indirectly a massive growth of two-wheeler market in India.

The scooter segment has registered a negative growth of 0.23 per cent between 1995-96 and 2005-06 while the motorcycle segment has accounted a remarkable increase of 7522.24 between 1995-96 to 2005-06. The production of motorcycle has surpassed the production of scooter in the year 1999-00 and since then this trend is existing and showing mania for motorcycle

In 1983, when Japanese two-wheeler giant Honda entered the Indian market, Bajaj Auto was the scooter king of India, accounting for a 75 per cent shown of the Indian two-wheeler market and an enviably long queue of customers who were prepared to wait as long as eight-nine months for allotment of the Bajaj Chetak, its most popular model, which owned its heritage to the Italian Lambretta of the 1950s. Bajaj did not realize that a large number of customers will switch over to motorcycle. In 1995, the Indian two-wheeler and just 760,000 motorcycles. In 2004-05, it is the other way around: 0.92 million scooters and 4.96 million motorcycles.

The huge market for motorcycle did not change all of a sudden but it changed gradually. The new four-stroke motorcycles launched by Hero Honda, in particular, offered greater fuel economy (which made them attractive to consumers at a time when fuel costs were rising) and unmatched reliability. Hero Honda's memorable, "Fill it; shut it; Forget it," advertising slogan said it all. Surprisingly enough the buyers took the bait. By 1998-99 things had changed very dramatically. For the first time, motorcycle sales exceeded those of scooter-1.36 million as against 1.29 million, which is the all-time high for scooters.

The pace of growth of motorcycle sales has been remarkable, clocking a compounded annual growth rate of over 20 per cent over the decade between 1995-96 and 2004-05.

The world's largest two-wheeler manufacturer Honda is so excited about the prospect of India being a growth market that it has started a second two-wheeler company in India, Honda Motorcycle and Scooter India (HMSI).

It is Hero Vs. Bajaj

The two companies together account for 80 per cent of motorcycle sales. The share of following firms in the production of motorcycle is as under:

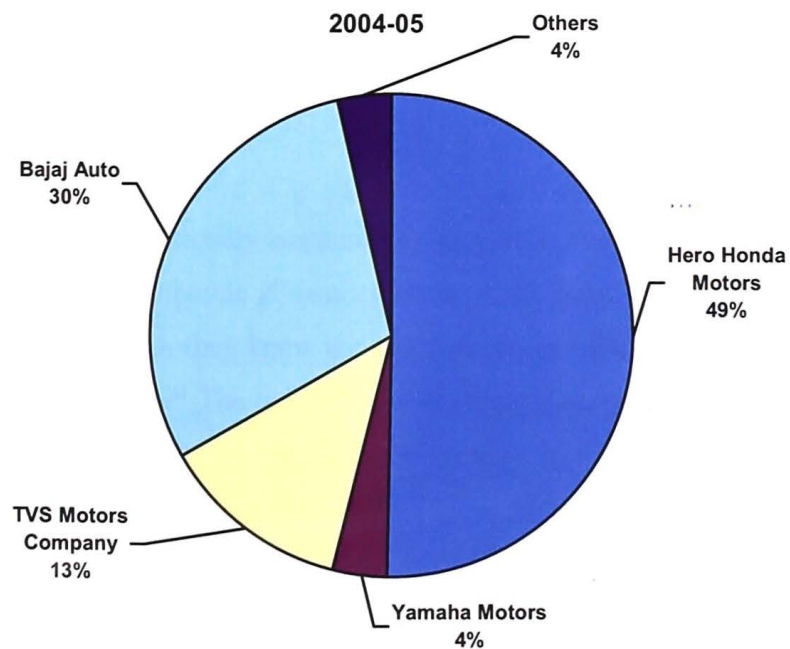
Hero Honda Motor : 50.3%

Bajaj Auto Limited : 29.7%

Yamaha Motors : 3.6%

TVS Motor Company : 12.7%

Others : 3.7%



Source : SIAM

There is a passion for motorcycle in small towns. A motorcycle is still a very inspirational product; in smaller towns and cities. When people buy a motorcycle it gives them a certain feeling of prestige. It gives a person a sense of freedom opens up opportunities and that is why people will continue to buy motorcycles.

5.12.5 Rural Market for Motorcycle

With switch over to the rural India, where 70 per cent of the population lives are yet to be targeted by marketers and with the growth of roads in the countryside, two-wheeler sales are expected to keep growing. Besides, with rising income and youth dominating the demography by 2011, a quarter of the population will be in the 15-24 age groups (according to the 2001 census) everything seems to be in favour of two-wheeler manufacturers. Rural roads will be the biggest driver of two-wheeler growth. There are some 25 million motorcycles on Indian roads. A lot of the motorcycles on roads today have been sold in urban areas, but the bulk of two-wheeler sales in the future will come from rural areas. In fact it is very surprising that no one has actually tried to make another Rajdoot (a popular rugged motorcycle in the 1980) in India.

Rural markets already account for almost a third of all motorcycle sales. Sanjiv Bajaj, Director (Finance) Bajaj Auto Says, "Rural buyers are extremely inspirational- they know the latest trends, but are more conscious of price and fuel economy" The two wheeler firms should try to reach areas. For this, dealers of various two-wheeler firms should open their shop with sales after service centers.

Although motorcycle manufactures and dealers point out that the majority of sales (in rural markets) are cash purchases, but finance option for rural buyers of two-wheelers are growing. Overall, while 95 per cent of car deals are financed, only around 60-65 percent of motorcycle purchases are financed. However, unlike cars, motorcycle sales have a few problems. There

is a gradual shift of consumers towards higher-powered bikes, but most consumers will upgrade towards a 125 cc product, not 150 cc and upwards.

Despite the entry of new players like HHM and Suzuki, which is expected to launch its bike later in 2006, and old players like TVS Motor, Yamaha and LML, the motorcycle market is a game of the two, Hero Honda and Bajaj Auto together account for 80 per cent of the domestic market.

A Hero Honda auto firm is undisputedly the leader with 50 per cent share followed by Bajaj Auto 28 percent. The growth in motorcycle is attributed largely to the opening up of the rural markets as also to its wider acceptance in the youth market. It is growing at an average rate of 20 per cent over the last three years. The scooter market is slowly losing its hold because it has high consumption of petrol per km as compared to motorcycle. Bajaj was the first to move in this direction and others are following suit. Both Kinetic and LML have made their entry into the motorcycle market while TVS and Hero Motors have also come into the scooter market. The manufacturers have realized that the only way to grow and with better market share is through new product introductions.

5.12.6 Factors determining demand

The various factors generating demand for two wheelers are as under:

- **Increasing urbanization and need for personal transportation:**
The ratio of rural: urban population has changed from 90:10 in the 1950s to 57:43 in 1995. Due to the heavy influx of people into cities, the transport infrastructure has been strained to the limit. This has increased the need for personal transportation especially for shorter distances.
- **Prices :** The price of Bajaj scooters, the largest selling brand, has been increasing at a rate lower than that of inflation over the last 25 year. The availability of a value for money product at the right

price coupled with the rising prices of mass transport fuelled the demand for two wheelers.

- **Supply:** The two wheeler industry has till date been supply driven save for the FY 1992 recessionary period.
- **Products and technology development:** With the government following a liberal policy on foreign collaboration, new products with Japanese and European technology were launched in the 1980s. These included products and features such as the 100cc motorcycle, electronic ignition, variomatic transmission, the four stroke engine and the fuel efficient moped which were launched in the eighties. These products, especially the 100cc motorcycle helped create and/ or tap new market segments. Hybrid products like the 'Scooty' from (TVS-Suzuki) made the two wheeler an integral part of a youngster's fashion statement. New products led to tapping of new market segments, thus pushing up demand.
- **Marketing:** Companies, responding to competition advertised aggressively, pushed distribution networks into new territories and the two wheeler demand kept going up.
- **Financing:** Increasing finance companies and corporate employers are financing the purchase of two wheelers, bringing them within the reach of the middle class.
- **Replacement:** The replacement demand for two wheelers has not been high till date. However, it is expected to boom from now on, as more and more owners with ageing vehicles (over 10 year old) are likely to switch on to new vehicles. The new vehicles are expected to be in the premium segment. This is the segment LML has been targeting.
- **Other factors:** The entry of foreign players and the broad banding of capacities have helped boost production. Low excise duty on mopeds and scooters has contributed to the growth in demand.
- **Other Factors for the growth of Two-wheeler :** Among the several factors, two factors played significant role in the growth of

two-wheeler (i) changing customer preferences, and (ii) introduction of new product-customer preference started changing from the early 1990s as the winds of liberalization swept the country. Several manufacturers experienced success on account of their ability to make new products, identify target market segments, and create products for them. The evolution of ungeared scooters, launch of premium scooter models, Japanese motorcycles, all found favour with customers and translated into growth for manufacturers. The success can be attributed to the effect of a large pent-up demand for new products, as the Indian customer had very few choices earlier. Launches of new products of high and consistent quality were a key to growth in 2001-02.

- The easy finance options were not much in practice till the early 1990s. Consumers finance has gained momentum since 1995-96 with the entry of several public and private sector banks into the fray, and making finance schemes available even in smaller towns and rural areas. Financing schemes have appreciably contributed to the growth in two wheelers.
- **Exchange Offers :** The system of exchange schemes of old two-wheeler with new vehicle has also contributed to the growth of two- wheeler.

Absence of good public transportation has also contributed in the growth of two-wheelers and it is the most effective safety valve that relieves the pressure in urban personal transportation. About 65 per cent of the two-wheelers population is concentrated in urban and semi-urban areas.

5.12.7 Capacity Utilization

**Table 5.9 : Installed Capacities in the Indian Automobile Industry
2003-04**

2003-04		2004-05	
Installed Capacity	(In Million)	Installed Capacity	(In Million)
Four Wheelers	1.51	a) Four Wheelers	1.72
a) Two & Three Wheelers	7.83	b) Two & Three Wheelers	9.13
c) Engines	0.18	c) Engines	0.18

Source : www.autoindia.com

The growth of a firm also depends on its capacity utilization. The above table shows the installed capacities of two and four-wheelers. The firm grows faster than those which make highest utilization of its capacity. The following table analyses the capacity utilization of the selected automobile firms.

Table 5.10 : Capacities and Production of Auto Companies (FY 1995)

	Capacity	Production	Utilization (%)
Bajaj Auto (Two & Three wheelers)	1272000	1132104	79.00
LML (Scooters)	250000	199440	79.76
Kinetic Honda (Scooters)	100000	92827	92.83
Escorts (motorcycles & motorized two wheelers)	210000	159829	76.11
HHML (motorcycle)	200000	183671	91.84
TVS Suzuki (motorcycle)	250000	87212	34.87
Kinetic Engg. (mopeds)	313000	122853	39.25
Majestic Auto (mopeds)	240000	121038	50.44
M&M (Jeeps and LCVs)	56000	40000	71.43
TELCO	153885	133965	87.56
ALL	36500	29880	34.35
Bajaj Tempo	30000	24036	80.32

Source : SIAM

With the entry of the first indigenously designed and developed small car, Indica from the House of Tatas, the great Indian car race has well and truly begun. Launching the car on December 30, 1998, Chairman of TELCO Mr. Ratan Tata said, "We started the Indica project with a commitment to

develop a car for the Indian market that could be benchmarked against the world's best in terms of features, looks and performance – and yet offers a great value proposition. A car designed for India rather than adapted for India. Today that vision has become a reality.”

The pricing of the car at Rs. 2.5 lakhs offers direct competition to the ubiquitous Maruti 800 which so far went unchallenged. With the other new entrants (Santro from Hyundai and Matiz from Daewoo) into the small car segment priced higher (at Rs. 3 lakhs plus), the threat from Indica has forced Maruti to slash down the prices of the popular Maruti 800 by almost Rs. 25,000 to bring it down to Rs. 1.85 lakhs. Simultaneously, the company also slashed the prices of the Omni and Zen models as well as announced a stripped down version of the Zen at a lower price of Rs. 2.95 lakhs.

Announcing the price cuts, Maruti Udyog's Managing Director Mr. R. S.S.L.N. Bhaskarudu defined any linkage between the move and Indica's launch. However he amounted the desire to “protect our turf” which promoted the company to take this step which he said “the company had been planning for a long time.’

5.13 EXCISE DUTY

Excise duty has proved to be one of the important factors determining the size and the growth of automobile industry. Global car majors like Ford, General motors, Toyota and others were not happy with the budgetary move in 2005-06 to reduce excise duty on small cars (up to 4000 mm in length, with engine capacity up to 1200 cc for petrol cars and 1500 cc for diesel cars) to 16% from 24% as it throws their growth plans in India out of gear. The policy decision of the government is seen as being detrimental to a building a globally competitive India. Mr. Arvind Mathew, Managing Director of Ford India says. “The decision could hamper the growth of the automobile industry and curb foreign investment into the country.” Mr. Mathews further remarks that “At first glance this looks a win for the Indian customers and the auto

industry, but when you analyze the bigger issues, the duty reduction on small cars could ultimately weaken India's position. It does not send a positive signal to global manufacturers, who have invested in India and created jobs." This will discourage the foreign investors in the segment of mid and large size cars.

Car manufacturers indicate that this excise reduction has sent some confusing signals. Over the last 7-8 years excise slabs on cars have been coming down progressively from a peak of 40%. Manufacturers are wondering if this current reduction is a one year episode or a long term decision. If the current excise duty on car is going to stay, some global players may hesitate to invest in the segment of mid and luxury cars.

5.14 THE KEY FACTORS BEHIND THIS UPSWING

Sales incentives, introduction of new models as well as variants models with easy availability of low cost finance continued to drive demand and sales of automobiles. The risk of an increase in the interest rates, the impact of delayed monsoons, and increase in the costs of inputs such as steel are the key concerns for the players in the industry.

As the players continue to introduce new models and variants, the competition may intensify further. The ability of the players to contain costs and focus on exports will be critical for the performance of their respective companies. Today, this sector has emerged as another sunrise sector.

With the globalization of Indian economy after July, 1991 The Indian automobile industry has witnessed a remarkable growth in terms of production, sales, exports and models. This chapter presents a study of growth of Indian automobile in terms of size, number of players and capacity utilization and profit. The entry of global players in the segments of passenger car, commercial vehicles and two-wheelers has changed the scenario of automobile industry in India. The firm which did not adopt new technology

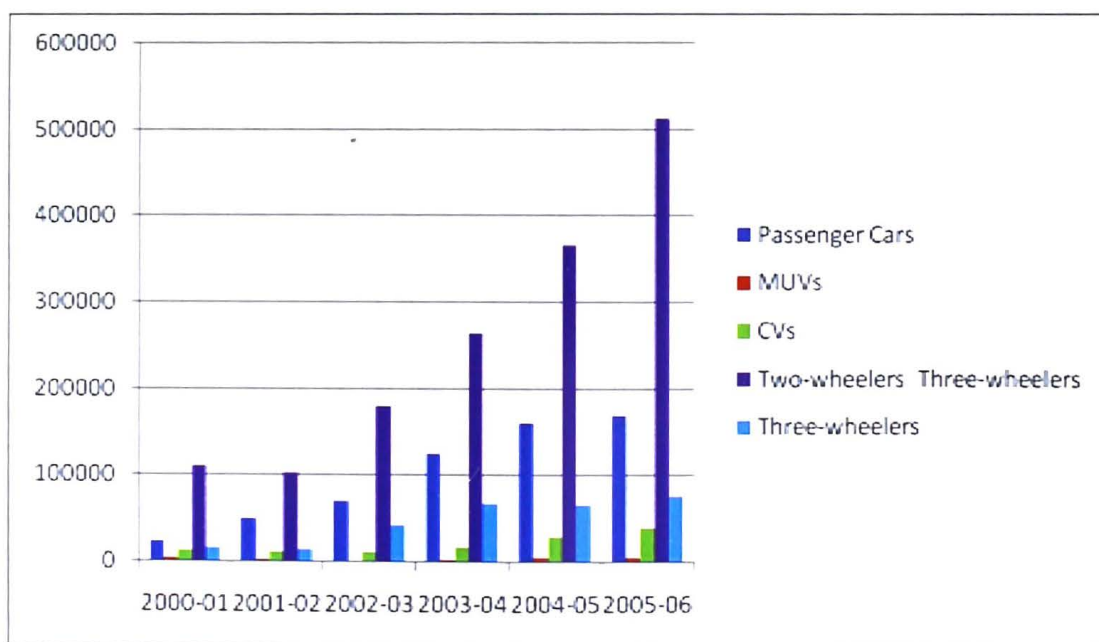
can not grow very fast. The Bajaj Automobiles, for example, has closed down its units for scooters at Pimpri due to considerable drop in the sale of scooter.

Table 5.11 : Exports of Vehicles from different segments. Table (In 000)

Year	Passenger Cars	MUVs	CVs	Two-wheelers	Three-wheelers	Total
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

Source : SIAM

Amongst the vehicle exported, passenger cars ranks first followed by two-wheelers, three-wheelers, MUVs and CVs.



Source : Computed from the above table

5.15 GROWTH OF COMMERCIAL VEHICLES

Tata Motors continued to grab the highest market share in the segment of M&H CVs since a long time.

Year	Medium to Heavy vehicle	Light commercial vehicle	Total
1996-97	144500	77200	221700
1997-98	88300	55600	143900
1998-99	79100	50700	128800
1999-00	106300	55400	161700
2000-01	82000	54600	136600
2001-02	90000	56700	146700
2002-03	115700	75000	190700
2003-04	161400	98700	260100
2004-05	198600	119900	318500
2005-06	205000	140000	345000

Source : SIAM

**Table 5.12 : Medium and Heavy Commercial Vehicles
(Trends in Market Share (in Percentage))**

Year	Telco	AL	HM	Total
1991-92	71.39	28.61	0.00	100.00
1992-93	45.43	54.57	0.00	100.00
1993-94	65.66	34.34	0.00	100.00
1994-95	69.66	30.17	0.17	100.00
1995-96	70.85	28.18	0.35	99.38
1996-97	70.40	29.30	0.30	100.00
1997-98	64.75	34.80	0.45	100.00
1998-99	61.15	38.40	0.45	100.00
1999-00	61.79	37.08	0.41	99.28
2000-01	60.22	38.85	0.14	99.21
2001-02	64.29	34.70	0.00	98.99
2002-03	67.59	31.50	0.00	99.09
2003-04	67.58	31.42	0.00	99.00
2004-05	69.64	30.08	0.00	99.72
2005-06	65.19	34.20	0.00	99.39
Total	975.59	516.20	2.27	1494.06

Source : Industry : Market size and share (CMIE) various issues

5.16 IMPACT OF INDIA'S GROWING ECONOMY ON CVS

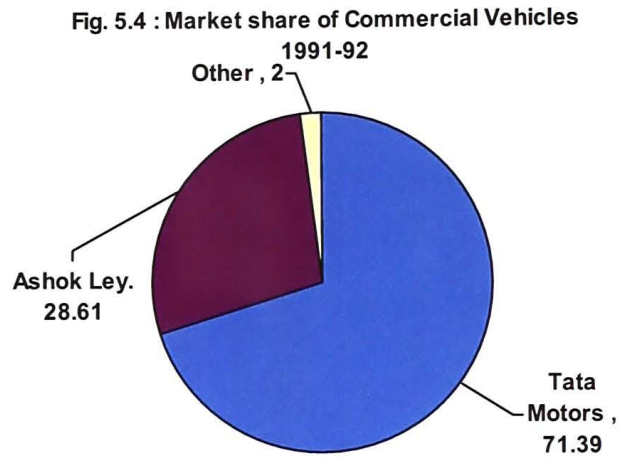
With the economy booming, commercial vehicle sales are clipping. Truck manufacturers are putting themselves on the back for more than doubled members to 345 lakh in five years. Big trucks did brisk business (sales grew 23 per cent last year over the previous), as did light commercial vehicles, or LCVS, which account for 40 per cent of the market. Reflecting the bit-city congestion, sales of small trucks, such as quadricycles surged.

Mr. Arindam Bhattacharya, Director, Boston Consulting Group (BCG) pointed out that, "The 15-16 ton truck, which constituted the bulk of the market a few years ago, is almost extinct. Operators, it seems, are going in for much larger vehicles on the highway."

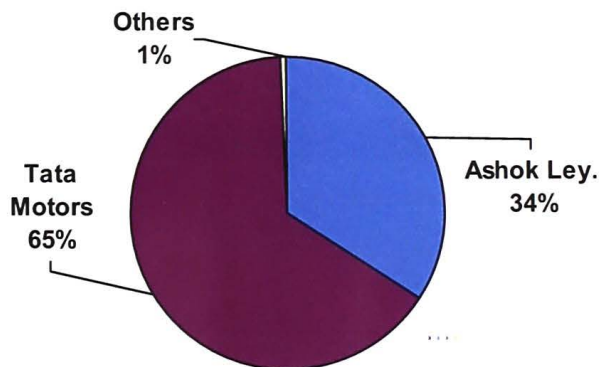
In an economy protected to become the third-largest globally by 2035, commercial vehicles demand will continue to be robust. And as in the car sector, global truck manufacturers are driving into the country. Daimler Chrysler, MAWAGE, and International Truck & Engine Corp. are among those coming. The latter two have tied up with Arun Firodia's Force Motors (previously Bajaj Tempo) and Mahindra & Mahindra, respectively. Their area of foes will be the high-tonnage trucks where demand is expected to explode in the years to come. The coming up of express way and high way will boost the size of market for trucks. According to an estimate, the total market for trucks could reach 500,000 (light and heavy) units by 2010.

Tata Motors and Ashok Leyland have dominated the medium-to-heavy truck segment with an 99 per cent share (the lion's share of 65 per cent is with Tata Motors). It is very difficult for Volvo company to make truck cheaper than Tata because Tata has advantage of necessary infrastructure for the production of Trucks. Volvo has sold just 2500 trucks (each costing upwards

of Rs. 50 lakh versus Tata's high-end 20 ton range, which starts at Rs. 30 lakh) in the six years it has been around in India.



Market share of Commercial Vehicles
2005-06



Source : Computed from Table 5.12

Foreign truck makers can do little about toll gate problems, but better highways is equal to bigger trucks is an arithmetic they understand. The market structure of automobile industry in India has undergone drastically changed due to change in the economic policy in early eighties and nineties. The size of market of all the segments of the automobile industry has changed. The monopoly market of HM, PAL and BAL came to an end with the entry of

other auto players. As a result, the customers can reveal its preference to buy the vehicle available in the market.

To summarize, it can analyzed that all the segments of automobile industry has indicated considerable growth rate after opening the economy in 1993. The factors contributing to the growth of automobile firms has been discussed.

Chapter -VI

Barriers to Entry as Growth Strategy

Chapter – VI

BARRIERS TO ENTRY AS GROWTH STRATEGY

In the previous Chapter, the issues pertaining to the growth of automobile industry under the market structure of two and four-wheelers have been analyzed and the question of how automobile firms achieved growth by diversification has been discussed. In this Chapter, we will focus on the concept of barriers to entry as a means to growth. We will attempt to review how barriers to entry influence the size and growth of automobile firms in India. The concept of entry barrier and how it prevents the entry of new firms will be discussed. The discussion regarding the sources, types of entry barriers and the factors that place-new entrants at a cost disadvantage in relation to established firms will be analyzed. Further, the relation of entry barrier to our study is also attempted.

6.1 BARRIERS TO ENTRY

Entry barriers refer to obstacles preventing potential entrants from engaging in the production of a particular commodity. In such a case, new firms have to face problems if they wish to enter an industry. Thus, entry conditions determine the extent to which existing firms can pursue monopoly behaviour without inducing a response from potential competitors. The policy of entry barriers adopted by the established and reputed firms is to discourage the entry of new firms. Such policies may be in the form of advertising, product differentiation, and creation of excess capacity and possession of trademarks which will, of course, help the well-established firms to grow both in terms of size, sales and assets.

Entry of a new firm in an industry will encourage competition among the potential competitors and established firms. Some economists have argued

that a threat of potential entry may affect the price charged by firms already established: in an industry. Douglas Needham (1969) observes: "If this fact is held valid, this line of reasoning elevates entry barriers, and in particular, their height, to a position of great significance in determining price and output patterns in the economy as a whole". (New firms may find their entry possible if they start selling their products at prices cheaper than those of the established firms. This may be possible only when new firms develop confidence among their valuable customers and follow proper advertising policy with better services (such as hire-purchase scheme, warranty period longer than that of the established firms, etc.) which have not been extended by the established firms. But the established firms may deter the entry of new firms by reducing their prices and extending other facilities such as free service after sales.

6.1.1 Economies of Scale as a Source of Entry Barrier

Economies of scale are a major source of entry barrier. It may occur when a firm's productive capacity causes total production costs to increase less than proportionately with output. As a result, long-run average costs of production fall. Economies of scale are generally classified as:

- (a) internal economies and
- (b) external economies.

Internal economies take place as a result of the expansion of individual firm, independently of changes in size of the other firms in the industry, while external economies exist if the expansion in scale of the whole industry or group of firms results in a fall in costs of each individual firm. Economies of scale, however, will create a barrier to entry for potential entrants. It means the existing firms can use their established capacities to increase output which will create hindrance for potential entrants. The size and growth of such firms will ultimately change. How does a new firm make its entry? The potential entrant would expect a lower price in the post-entry situation.

Dixit (1979) presented a model in which established firms can select capacity to discourage entry. Bain (1956), in his seminal work on "conditions of entry" argued that the necessity for a firm to be large, relative to the market in order to attain productive efficiency creates a barrier to entry. In assessing the importance of the large-scale economies as entry barrier, the limit pricing model of entry deterrence was introduced in which established firms act as a profit cartel and potential entrants expect the former firms to maintain their pre-entry levels of output even after the entry. This model has been a subject of criticism, because Dixit (1979) pointed out that it may not be rational for the established firms to keep output constant after large scale entry has occurred. It has been observed that the established automobile firms can increase capacity utilization which can create entry barriers to the new entrants. Moreover, Stigler (1968) and others have challenged the basic idea that the large scale economies can create a meaningful entry barrier. These critics have stressed the fact that once an entrant has invested in an efficient plant, there is no difference (under the usual assumptions) between its position and that of the established firms. Without a post-entry difference, Richard (1961) argued there can be real barrier to entry.

The basic point that arises here is that established firms, assuming they can coordinate their actions, have the advantage of being able to make some irreversible decisions before new entrant appears. In particular, they can select the level of capacity facing any new entrant. Even if entry occurs and the established firms wish to have less capacity, their pre-entry commitments may make a rapid reduction in capacity possible. Recognizing this, entrants may be deterred. In his formal analysis, Spence (1979) assumes that the established firms build enough capacity to produce merely the competitive output. Before entry, they produce the monopoly output, but they threaten to use all their capacity. This threat is believed, as Spence (1979) assumes it would be, entry can clearly be deterred. But Richard (1981) argues that the threat to increase output after entry is surely no more credible than the threat to maintain output that is the core of the limit price model. Dixit finds that the established firms

may still be able to profitably deter entry if they can commit to a level of capacity before potential entrants appear. Maruti automobile firms deter the entry of new firms in the segment of small cars by creating excess capacity utilization.

- Thus, an established firm may prevent the entry of potential entrants in order to get a desirable size of the firm. But it is also true that the threat of entry of new firms may enhance the possibility of competition in the market. Once competition takes place, the potential entrant will try to use all possible economies of scale to make entry into the market. Thus, established firms may not prevent entry of potential entrants. The new firms will be able to increase their sales and thus the size of the firms will increase.

The established firms, therefore, may charge a limit price (which is higher than minimum attainable average cost) and prevent entry. This tendency shows that the established firms can achieve growth through preventing entry of new firms. The established firms in the segments of Two-wheelers, MUVs, Passenger cars and Commercial vehicles such as Hero Honda, Bajaj Auto, Honda, M & M, Maruti and Tata Motors have advantage of economies scale and these firms give tough time to the potential entrants who make their entry in the auto firms. The established firms have advantage of scale of production as compared to the entry of new firms.

Muller and Tilton (1969) and others see the maturity of the industry is important in defining the role of technological change as an entry barrier. It is essentially argued by them that in the early stages of the life of industry, small firms have most opportunities because scale economies are unimportant, market shares are volatile and loyalty is weak. However, as the technology matures, scale, efficiency and brand loyalty are built up, making opportunities for small firms fewer and entry more difficult. The basic hypothesis is that the entry is related to advance in product technology. As technology matures the rate of innovation declines and so does entry. The potential rate of product

improvement declines, the impact of technological change on entry is a hypothesis that states that a technological advance will enable a firm to oust rivals from the market and that will lead to monopoly over in the market. Thus technological change as entry barrier favours the growth of the established firms.

6.1.2 Product Differentiation as a Source of Entry Barrier

Product differentiation, being an important source of entry barrier, deters new firms to enter an industry. A firm which has ability to differentiate its product may increase opportunities for competition. With the introduction of product differentiation, manipulation of both price and selling costs become part of a strategy that may be adopted by existing firms to restrict entry. What is most relevant here is the role of heavy sales-promotion expenditure in increasing the resources needed by potential entrants to affect a successful entry into a market. Thus, product differentiation too reflects the size and growth of firms.

Bain (1956) found that product differentiation was the most significant barrier to entry in the U.S. manufacturing industries. Product differentiation refers to the ability on the part of producers to differentiate products, one from another. The goods are differentiated through packaging, branding, trade mark, offering auxiliary services to buyers. The buyers have advantage to express their preferences for different types of products. There are preferences of buyers for the products of established firms as compared to those of new entrants. Such preferences can, however, always be overcome if the new entrant invests sufficiently in sales promotion activities. The entrant would have to incur sales promotion costs per unit at output, which are higher than those of established firms. An existing firm may have goodwill in the market as a result of which it may get credit on easy terms; it might have gained considerable expertise in the business through experience. The new firms eager to join the market may find it difficult to compete with such established firms. Product differentiation presents two sets of factors: The basic

characteristics of products within the market, and the present and past policies of established firms with respect to advertising, product design, servicing and distribution.

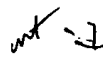
It is noteworthy that, Bain (1956) in his authoritative examination of product differentiation in 20 manufacturing industries in U.S.A. found that product differentiation as a barrier to entry was very important in six industries such as tractors, and large farm machinery, typewriters, cigarettes, liquor, fountain pens (high priced) and automobiles. They were also moderately important in seven industries and unimportant in the rest. It was found that high entry barriers were frequently attributable to product differentiation than to scale economies in production and distribution. He found advertising to be the most important source of product differentiation in the consumer goods industries in his sample. The differentiated products are advertised to attract the consumers. If a reputed firm, which has won the confidence of people, advertises the differentiated products. This will create demand among the consumers for their products. Thus, established firms will prevent the entry of new entrants. It is clear that the existing firms will grow at a faster rate than the potential entrants.

The automobile firms such as Bajaj Auto, Hero Honda, Maruti, Tata Motors, M & M, and Hyundai in the segments of two-wheelers, Passenger Cars, Utility vehicles, and commercial vehicles differentiate their product from their rivals in the form of design, colour, trademark. Product differentiation has helped them in their size and growth

6.1.3 Excess Capacity as a Source of Entry Barrier

Excess capacity in a business firm refers to the ability to produce more than what is currently produced (accumulation of plant and equipment). Excess capacity plays a vital role in preventing the entry of new firms and also helps in the size and growth of a firm. The firms which want to prevent the entry of new firms may create excess capacity. Similarly, a firm which wants

to make entry may create excess capacity deliberately.

 Pashingian, B. D. (1968) briefly alludes to a situation in which excess capacity may be used by established firms to forestall entry, by threatening to lower price and use such excess capacity to increase output if an entrant should appear on the scene.

Firms, which want to grow by using excess capacity, must have efficient equipment. Equipment which is idle because it is obsolete or inefficient it does not contribute toward excess capacity. If the established firms are using capacity utilization fully, the potential entrant, therefore, would be put at a disadvantage because it does not command large customers. To overcome this disadvantage the entrants may be forced to sell at a price lower than that of established firms. Another alternative is that the entrants have to incur high selling costs per unit in order to secure a reasonable market share. Apart from this, the size and growth of firms also depend on the quality of products, availability of raw materials, price, behaviour of sellers, service after sales, etc.

6.1.4 Advertisement as Source Entry Barrier

Advertisement plays a vital role in determining the sale of the automobile industry. It influences the choice of customers to buy the advertised products. Hero Honda, Bajaj Auto Limited and Ford companies have made vigorous campaigning for marketing their products. Each automobile firm tries to gain larger piece of the pie by attracting as much customer attention as possible. As a result, competition takes place regarding the sale of the vehicles. Auto expert Murad Ali Baig says: "Competition will ensure low prices and good quality, the customer now has a choice of 16 petrol cars, 6 diesel options and several price and accessory options." The automobile manufacturers are deeply engaged in promoting their sales through attractive advertisement and offering many incentives for the their customers

Various auto firms invest a lot of money in its advertising and marketing campaign. The Telco campaign for Indica appeared to be picking up and concentrating on its “more car per car” slogan. There is a need to make their voices through an advertisement which conveys their message to the buyers for the products. Brand building exercise has become more arrayed in case of rising competition. It is believed that customers tend to identify the product with the brand ranking it.

“Hyundai Santro” made an effective advertising campaign in which its star attraction Shahruk Khan was presents to show a complete family car for Indian conditions. The advertisement campaign made by a bollywood star initially helps the firm in its growth. But the future growth of the firm depends on quality, price and convenience of the vehicle.

Innova, a product of Toyota, has made the presence of Mr. Amir Khan (an actor) from bollywood to attract the attention of buyers in order to boost its sale. Hero Honda being, the market leader in the segment of motorcycle has captured the Indian market through emotional advertising campaign, “Hero Honda Desh Ki Dhadkan.” Advertising is an important source of entry barrier which can deter the entry of a new firm. Thus the existing and established firm can continue to grow.

Maruti, on the other hand, has been emphasizing on its extended presence on the Indian roads. Maruti also resorted to another unique way to attract customers. It has organized “The Maruti Women” Power drive on January 17, 1999, “to treat the Mumbaikar ladies with their families.” With all these activities, the only beneficiary can be the customer. Now all the small cars that are here, buyers need wait no longer to decide.”

6.1.5 Innovation as a Source of Entry Barrier

Innovation requires firms to develop a truly global mindset. This implies that the companies must understand the difference across cultures and across countries and should engage in business model innovation locally to satisfy the unique needs of the customers in a particular country. Innovation helps / fights a firm to overcome the entry barriers.

But truly speaking, the most innovative companies have realized that “innovation” is not just about developing new products and providing services but, more fundamentally, about discovering new ways to create value.

To remain competitive in to-day’s business world, every firm must make innovation a central pillar of its strategy for differentiation and growth. But how ready are Indian automobile firms to make innovation as an integral part of their growth strategies? The study shows clearly that Indian auto firms recognize how critical innovation is to thriving in today’s global market.

“Tata Motors” has initiated a “new product introduction process that defines business processes for new product.” M & M” has been an innovator in the segment of the MUVs, be it a soft-top, 10-seater rural transport vehicle (Commander), an urban utility vehicle (Armada), or a stylish and contemporary sports utility vehicle (Scorpio), M&M has been innovating its way up in the auto industry. It has now introduced the concept of customized vehicles. The Scorpio Passion, Scorpio CEO and Bolero Commando are made and sold exclusively as per customer request. Innovation is a new way to create value for the organization and for the customer. As the market leader, Maruti must continuously innovate to stay ahead of the other car makers. Thus it can maintain its growth rate in terms of market share, sales and net assets.

6.1.6 Warranty as a Source of Entry Barrier

Under the warranty scheme, when a car is brought to the workshop for repair and only if the workshop engineers authorized by the company detect a fault, then the car is repaired. Therefore, car-owners should keep in mind that they get their vehicles repaired only at a service center authorized by the company. If the car is repaired by some other mechanics or at some other garages, then warranty loses its meaning.

If, while buying a car, the customer has paid some additional charges, then the warranty is extended for a period of more than one year. Under the warranty, car companies act immediately on a customer's complain and correct the snag. The buyer of a car should now definitely avail of the warranty granted by the manufacturers. He should be aware of the various facilities granted by different companies under their terms of warranty.

This is as important as the customer's awareness about the car's price, model, outer structure and fuel efficiency. If the company grants a longer warranty period albeit for a price, car buyers should definitely avail of it.

Table 6.1 : Time Duration of Warranty by some Manufacturers

Car Manufacturer	Brand Name(s)	Warranty Period	Mileage Limit
Maruti	Esteem, Zen, Maruti 800, Omni	1 year	No Limit
Hyundai	Santro	1 year	No Limit
Daewoo	Cielo, Matiz	2 year	No Limit
Telco	Indica	½ year	No Limit
Fiat	Uno, Siena	1 year	No Limit
Ford	Escort	1 year	No Limit
General Motors	Opel Astra	2 year	No Limit

The advent of new car companies has led to the introduction of car warranty system in India. An awareness of the details of warranty offered by various companies would be of immense help to the buyer. The introduction

of warrant system in passenger car has made the entry of new firms possible. Several international manufacturers have stepped in to fulfill the growing demand for providing warranty. As a result; a healthy competition has developed in the car market in India.

Invariably, while buying a car, the person concerned pays special attention to the vehicle's looks, the price of the vehicle and its fuel consumption. Along with these, the buyer should also pay attention to the warranty granted by the manufacture.

A decade back, the companies engaged in the sale and purchase of cars did not take their vocation that seriously. There was hardly any competition in the market. In those days, if any technical problem was detected in a brand new car, then the car-owner would have to contact the concerned car company and wait for them to take action.

But now the situation has changed drastically. After buying a car, these days, if any technical fault is detected in the vehicle, there is no need for writing complain letters. Now-a-days, at the time of purchase itself, the customer is guaranteed the right to get the car repaired or even replaced if it develops some snag.

Now car manufacturers have started giving a warranty with each car before the entry of Maruti. The system of granting warranty was first started by Maruti in 1984. Maruti had fixed the pre-condition that the warranty would be granted within a period of one year from the date of purchase or if the car had not travelled over a distance of 20,000 km.

But now almost every car manufacturers grants a warranty of one year even if the vehicle has logged more kilometers. This warranty covers the parking of car's engine, gear box, alternator, starter motor, electrical wiring

and brake lining. But no warranty is granted in case of leakage of gas in air-conditioned cars.

Repair of wheel balancing, change of oil and fluid are not covered by the warranty. Besides this, the bulbs, oil and oil filter too are not covered by this warranty. Some other important components of a car, like its tyre and battery, are, on the other hand, covered by the warranty.

If the car has been damaged in an accident or is malfunctioning due to pollution or due to participation in a race, no warranty is provided. If the car is used for commercial purpose or has been registered as a taxi, then too, no warranty is provided. But some cars, like the Cielo and Matiz, are an exception to this. Even if they have been used for commercial purposes, a warranty covering, 50,000 kilometers is provided for these cars

6.1.7 Entry Barrier due to up gradation of Technology

M&M launched new Bolero DX in March 2006 which is an upgraded variant of the Bolero GLX in the passenger vehicle category. The MUV comes equipped with powerful 2.5 litres, 72.5 bhp diesel engines with a synchromesh five speed gearbox. The independent front suspension helps in making long rides a comfortable experience for both the driver and the passengers. Standard features on the Bolero SLX include air-conditioning, power steering, power windows, audio central locking.

According to Mr. Rajesh Jejurikar, marketing & sales executive, automotive sector M&M, "The Bolero SLX is a premium version of immensely popular Bolero MUV. The variant has been designed to bring a fresh look to the Bolero family. It will give a too distinctive look and push feel and will be a new experience for Bolero SLX users. "In the segment of MUVs, the other auto firm does not produce this type vehicle thus; it serves as entry barrier for the new entrant as well as the old one.

Auto India (March 2006) which is auto magazine has made a detailed analysis of upgradation in technology. The established firm can create entry barrier for the new firm by making improvement in its technology. Mahindra & Mahindra has recently launched the diesel version of its SUV, the Scorpio, in the Malaysian auto market. The petrol variant was introduced in the country in May 2005. The Mahindra Scorpio diesel SUV is powered by turbo charged engine with 109 dhp and 26kgm of torque. It boasts an electronic 4wd and luxurious seats that can accommodate eight people. Mr. Hafiz Vakil, GM exports, overseas operations, Mahindra and Mahindra, remarks that, “the diesel variant of the Scorpio is a great success in Malaysia too”. In this manner an established and reputed automobile firms can create artificial barrier to the entry of new firms. The Bolero and Scorpio have been a great success on Indian roads.

6.1.8 Price as a Source of Entry Barrier

Another significant source of entry barrier is the price of vehicles. The customers are badly influenced by the price which is offered by the automobile firms. The established firms like Baja Auto, Hero Honda, Maruti, Tata Motors and Ashok Leyland can create entry barrier to new firms by lowering their prices. At the same time it is also true that the potential entrants can make their entry possible by selling the product at a price less than the established firms. Bajaj Auto Limited has entered successfully in the segment of motorcycle where Hero Honda is the market leader by capturing almost 50 % of its market share. It was generally believed that it is very difficult for the new firm to make entry in the segment of small cars since Maruti enjoys monopoly. Due to its economies of scale, Maruti sells at a price where new firm can not dare to imagine to sell at such a low price. But Tata Motors has succeeded to make its entry in the segment of small cars by introducing its popular model INDICA. Tata reduced its price of car and it was driven by both diesel and petrol. Tata got huge customers for its small car and it is mostly used as Call Centre car in metropolitan cities. The firms which made

their entry in the segment of small cars Hyundai, General Motors, Fiat and others.

6.1.9 The Entry barrier for Affordable Cars

The auto firms like Maruti and Tata providing affordable cars for the middle class people can create entry barriers for the new entrants for the established firms which can not produce such cars due to high cost or diseconomies of scale.

The cost of Production of passenger cars and two-wheelers are low in the case of Maruti Udyog, Tata Motors, Hero Honda and Bajaj Auto limited. These auto firms are operating at low cost due to large scale production. The fact is that all the action is still concentrated at the lower end of the market and the existing players, mainly Maruti, Tata and Hyundai, have made the entry barriers into that segment too high. Their cost structure is difficult for other companies to match and this is why Toyota has scrapped its plans to launch a small car with Daihatsu and gone back to the drawing. The unique nature of this market and its huge demand for cheap cars has forced carmakers to rethink their cost base like never before.

6.2 ENTRY STRATEGIES IN EMERGING ECONOMIES

In anticipation of rapid growth, the passenger car market in India is crowded with 14 companies trying to establish themselves. Most companies have joint ventures with Indian partners and have entered the market in the last seven years. The number of new entrants over a narrow time window of seven years is unprecedented. Demand forecasts vary and analysts expect anywhere between 3.5 and 4.5 million cars to be sold in the next five years. Equity holding for the international partner is usually over 50% and they retain significant managerial control. Most of them have introduced cars in the \$13,500 to \$33,000 price range, which is viewed as a luxury segment in India. Automobile companies have also chosen to establish exclusive dealerships. Initially, companies have chosen to import completely knocked down (CKD)

kits and assemble them in India. However, this strategy is not effective in the long run since such imports attract 50% duty. The major implications are that a shakeout is likely and that companies would need to have alternate plans, including introduction of cars in other market segments, lower prices, and exports from India if they cannot establish themselves in the domestic market. The global auto firms need to develop simultaneously on all fronts including rapid capacity expansion, acquisition of technology, improvement in manufacturing practices, quality and productivity, adoption of lean manufacturing, and developing product design capabilities to meet the needs of assemblers.

The Government of India's automobile policy announced in June 1993 attracted a large number of automobile companies to India. These include General Motors and Ford, and three Japanese, six European and two Korean companies. Chrysler is also seeking to enter the country with a suitable Indian partner. In addition, there are three existing Indian companies, Hindustan Motors, Premier Automobiles and Telco, and one Indo-Japanese venture Maruti already in the passenger car market. Maruti, being the biggest player in the segment of small car had with about 70% of the market share in 1996 which has now slipped to 41.57 in the year 2006. As of April 1996, a total of 14 Automobile companies have either begun operations in India or started after that year. The number of new entrants and the level of investment within a very narrow time window of two to three years is unprecedented and seems unique to India. Compared to three major models available in the Indian market until 1993, customers can now choose from a wide variety of products.

Some of the entry barriers faced by automobile companies in India are relatively high levels of import duties, a nascent ancillary industry, and product modifications required for relatively poor road conditions and high levels of heat and dust. On the other hand, a rapidly growing middle class, rising per capita income, and high levels of latent unsatisfied demand with customers starved of world class options promise enormous opportunities. For

instance, from current sales of around 300,000 passenger cars in 1996-97, sales are expected to rise to anywhere between 1.5 to 2.0 million vehicles by the year 2008. The number of cars sold over the next four year is going to be anywhere between 2.5 and 3.5 million vehicles.

- It is not certain how exactly demand will grow and on what factors will it depend, and whether there is room for so many players. The supplier industry also faces enormous challenges to keep pace with rapid growth. Manufacturing practices will have to change considerably to come closer to lean production. It is also possible that some companies will increasingly use India as a base for exporting vehicles to other countries. These issues will become clear as, the future unfolds. At this stage, we describe and analyze the entry strategic of multinational companies in the Indian automobile industry.

6.3 ENTRY STRATEGY

Entry Strategy for international markets is a comprehensive plan, which sets forth the objectives, goals, resources, and policies that will guide a company's international business operations over a future period long enough to achieve sustainable growth in world markets (Root, 1994).

The time horizon we have used for entry strategy research is 1 to 3 years. For accompany, each product in each foreign market has a different entry strategy. The corporate international entry strategy is a combination of the different entry strategies of its various products in various foreign markets. There are various elements of entry strategy. In this section, we have considered the following elements.

- Choice of product
- Timing of entry
- Magnitude of investment and area of competitive emphasis
- Marketing plan to generate the target market
- Performance in the target market.

Every year auto firms present their new models at the Auto Expo which is being held in New Delhi. New models of vehicles in all the segments are launched by the auto firms. It provides a lot of choice to buyers. Thousands of people visit every day to witness the new models of the vehicles introduced by the firms. Once these models are launched, one problem arises before the customers that they can not decide which vehicle to buy

The new bunch of global auto players is ensuring that they, with so many cars which offer choice (at least to the average consumer) in terms of product differentiation, are attempting to grab a piece of a limited pie.

Research Findings

The Indian automobile industry is still in this evolutionary stage. There is no widely accepted method of segmenting the Indian market as yet. The segmentation provided in this paper is based on an understanding of the current state of the industry. These segments are quite different from the segments known in the US, European or Japanese markets. The following six segments have been identified.

Four-wheeler

- 1) Off-road vehicles, e.g., Maruti Gypsy, Mahindra Armada, Tata Sumo.
- 2) Economy segment, comprising cars priced at less than \$13,000 e.g., Ambassador, Premier, Maruti 800.
- 3) Luxury segment, comprising cars within the \$13,500 to \$33,000 price bracket, e.g., Zen, 118NE, Contessa, Esteem, Sierra, Peugeot, Astra, Cielo, Ford Escort, Volkswaen, Mitsubishi Lncer.
- 4) Super luxury segment, comprising cars priced higher than \$33,000 e.g., Mercedes Benz, BMW and Audi.

Two-wheeler

- 5) Economy segment, comprising Motorcycle and Scooter priced within \$ 1.5
- 6) Luxury segment, comprising Motorcycle priced higher than \$ 10

- This segmentation is largely based on price and reflects the fact that the automobile is currently priced at about 18 to 24 months salary for individuals in the target segments. This is in contrast to Western markets where prices are less than 6 months salary. However, middle class incomes are rising rapidly. A model sold in the West is likely to cost more in India for some time to come because of import duties. With progressive reduction in duties and increasing indigenization, prices are likely to come down in the future, at least in real terms. The adverse price to income ratio will therefore come down, and is likely to further spur demand. Some automobile companies are also planning to use India as a manufacturing base to supply cars of other countries. This has the added advantage of eliminating duty payments for exported cars.

The entry strategies of fourteen new entrants to the Indian automobile market, in terms of the different measures of entry strategy identified. A close look at the entry strategies of the multinational companies in the Indian automobile industry points to some distinct patterns. Except for Audi, which is targeting a premium market niche, and Hyundai, the rest of the companies have set up joint ventures with Indian partners. Audi has announced plans for franchising automobiles. Recently, Hyundai has announced plans to enter the country with a wholly owned subsidiary. For most of the new joint ventures, management control lies with the MNCs. For example, though General Motors India is a 50:50 joint venture of GM and Hindustan Motors, ten International Service Personnel from Opel form the entire top management team of General Motors India. Similarly, Daewoo in DCM Daewoo Motors, Ford in Mahindra Ford, Mercedes in Mercedes Benz India Limited, Honda in Honda Siel, and

Volkswagen in Eicher Volkswagen exercise significant management control. All these companies have expatriate managers in top positions.

Incremental internationalization is the mode recommended in a number of studies by researchers from Western countries (see Johanson and Vahlne, 1977) and Welch and Luostarinen, (1988). Initial involvement in a foreign market is conceived as a gradual and sequential process by most of the studies. This gradual pattern is thought to be the consequence of greater uncertainty, higher costs of gathering information, and the lack of experiential knowledge in international marketing activities. Several distinct stages are identified along the internationalization process for a firm in a foreign country, including pre-export stage, experimental involvement, active involvement, and committed involvement. However, the multinational firms cited here have directly gone in for active involvement. This could be due to high import duties for cars, inadequate existing capacity, and expectations of rapid demand growth. Most automobile companies have preferred joint ventures even though the Government is not restricting foreign companies from setting up wholly owned subsidiaries. Joint ventures provide international companies with partners who understand local markets, government regulations and the supplier industry better, and also reduce initial risks.

An interesting feature of car sales is the use of 'bookings', i.e., getting customers to deposit \$500 to \$1000 for a car that will be supplied a few months from the date of booking. This method of trying to tie up customers is possible because of the large amount of unsatisfied pent up demand, severe capacity shortages, and the initial glamour for foreign cars. These bookings are so successful currently that a company's entire capacity is booked within a month. Some credit card companies are encouraging its card holders to book cars by offering to cover them if they choose to default and not buy the car at a later date. The total number of bookings made across all companies is much more than the most optimistic demand estimates. This suggests that many bookings are speculative and there could be an active secondary market for

these booking as productions take off and deliveries begin. Another factor fuelling advance booking is the practice of many business houses supplying cars to their executives as perks.

6.4 IMPLICATIONS FOR INDUSTRY AS A WHOLE

There are 47 automobile companies consisting of all the segments jostling for a market whose size by the most optimistic estimates is around 1.10 billion vehicles per year by the year 2006. This clearly shows that sufficient room for so many players is not there. This means companies will need to have clear strategies on what they will do if they are not able to establish a viable market presence. One alternative is to use India as a manufacturing base to supply vehicles to other countries in South Asia, Middle East and perhaps the Eastern block countries.

The other major implication is that automobile companies need to pay attention to the development of the supplier industry. Rapid growth in assemblers' capacity is possible only if suppliers are able to keep pace with them. The strategy used by Suzuki in 1980 of facilitating joint ventures between its major suppliers in Japan and some Indian companies is a good one. However, the supplier industry needs to grow, acquire new technology, improve manufacturing practices, quality and productivity, and restructure itself into first, second and third tier companies. There is also a lot of pressure on suppliers from assemblers to acquire product design capabilities. Simultaneous, fast development on so many fronts is possible provided assemblers facilitate the process.

Automobile companies may also need to rethink their strategy of introducing models successful in developed economies into India. High quality roads allowing driving speeds of over 50 miles per hour over long stretches are still rare. These models are still perceived as high priced luxury cars by the middle class. For car sales to really take off, tailored products at lower prices may be an alternative. Automobile companies are also not paying

enough attention to vehicles other than passenger cars. There is likely to be a lot of opportunities in products like jeeps, light commercial vehicles, buses and trucks. These markets are growing fast and there is relatively little competition.

6.5 ENTRY BARRIER BASED ON QUALITY OF SERVICE AND SAFETY

A firm can create entry barriers for potential entrants by providing quality service after sales. Demonstration of new models and benefits are given by courteous and well-dressed 'sales consultant'. Customers are knowledgeable within minutes of their arrival, test drives and vehicles are delivered when promised. "We believe that the quality of service available from dealership will be the discriminator now and in the future," says Mahindra Ford vice-president (external relations) Mr. B. S. Rathor.

So, say goodbye to the days of hole-in-the-wall dealerships, inadequate displays, untrained manpower and lack of standardization. "One has to be visually different and impressive," says Honda Sael Cars India president & CEO Mr. T. Fujisaki.

For standardization, look at Mahindra Ford's efforts. All its dealerships have adopted common standards for showroom size, workshop size and equipment. All the equipment has been sourced from different global suppliers to ensure standardization and economies of scale. All dealers subscribe to a common dealer identification programme and all the building plans of the dealership were reviewed by Ford's US-based architectural experts. The objective of Ford Company is that the customer should get the same level of service at every dealership.

The Ford network consists of 19 dealerships spread nationwide. Ford plans to have 25-26 dealerships, penetrating deeper, into Kozhikode (Kerala), Madurai (Tamil Nadu), Surat (Gujrat), Bhopal (Madhya Pradesh) and

Amritsar (Punjab). Honda has started up with dealers - called Honda Exclusive Authorised Dealers (Heds) – in Delhi, Chandigarh, Chennai and Vadodara. The company plans to have a nationwide presence, covering another 13 cities, including Mumbai, Bangalore, Ahmedabad, Hyderabad and Culcutta. Daewoo now boasts of 120 dealers. The company now has planned to set up “comprehensive service stations” in the metros, which will boast of such features as restaurants, departmental stores and amusement corners. If one is set to buy from a dealer in a town, sets dealership in town. There must be another nagging worry in the minds of buyer that where does one get service for such an expensive car. Another problem arises in the mind of customer that where does one get the parts. If a car owner relies on his mechanic, the innards of his new model may soon resemble a box that went out of fashion decades ago.

Now such fears shouldn't haunt in the mind of car buyers. Most of the dealerships of the global auto majors have workshops within the premises. Ford dealerships, for instance, have three facilities: the show room, a quick-service workshop and a full-function workshop..

6.6 GROWTH OF AUTOMOBILE FIRMS BASED ON MARKETING STRATEGIES AS ENTRY BARRIER

The Indian automobiles industry has entered a competitive phase, with trade barriers falling off and economic landscape being shaped by two powerful forces – technology and globalization. Technology has driven globalization. Customer requirements and competitive forces have changed significantly the quality of products.

The Automobile industry has witnessed the emergence of customized marketing which definitely resulted in the growth of Industrial automobile industry in the 90's. The development of marketing occurs when a company

introduced a product or a service that meets the requirement of the customers. Today's customers want the added services, great convenience, customization, return privileges, guarantees – all the best value for money. Growth may not take place if a manufacturer is able to produce a quality product. When economies develop, quality is no longer determinant of brand choice.

Maruti Udyog Limited has maintained its growth in the market through introducing various models of passenger cars that suits the requirements of the customers. Maruti automobile firm is still the leader in the segment of passenger cars despite the entry of several forms in the segment. This is due to the fact that the Maruti firm meets the customer's satisfaction.

Ashok Leyland initiated the motion of realigning its business processes towards the customer in 1999. All the links in the supply chain are looked upon critically in order to enable a value addition in each of its element. Ashok Leyland considers its customer as the starting point and it is the customer that decides and defines not only the product but also the after-sales support from this chain of development manufacturing and marketing process.

think → A product management function in marketing is initiated to capture the voice to the customer. Right from translating the needs of the customers into the product and services, this function is redefining and orienting business process with the customers as the individuals behind the steering wheel. It is not just a vehicle that Ashok Leyland believes in giving his customer but transport solutions. It is the reason this firm is a leader with segment of HC vehicles.

6.7 MARUTI UDYOG LIMITED A CASE STUDY

The '800' Challenge

Ever since rolling out its Maruti 800, to fulfill middle-class customer's desire to own a car, Maruti Udyog Limited (MUL) has made rapid strides in

the domestic car market. Its major strengths lie in its expertise in small car technology and extensive range of products. The other strengths are its countrywide dealership network and integrated manufacturing facility. It goes without saying that the company's ability to price its products competitively has helped it immensely.

Despite a sharp increase in input prices, and interest rates in 2004-2005, Maruti was able to improve its profit margins with highest annual sales recorded at 487,402 units for the same period. The net sale for the year has increased by 20.1%. Further, even with the higher volume, the company topped the annual JD Power's industry quality for 2005, sixth year in row. Its models, Alto, WagonR, Swift and Esteem, received top rating on the parameters such as quality, cost of ownership, and appearance.

Maruti's various strategies have helped it retain chunk of the market share: It holds over 50% of market share. For the customers, at the entry level, the company has rolled out the 'Alto' model as an additional option. The company has customized its schemes, targeting specified customer segments like teachers (which added 6900 teachers to its customer base) and two-wheeler owners, and consolidated its position in the premium compact segment.

Maruti has emerged as a one-stop shop for its customers with its new service businesses – Maruti N2N (Lease and fleet management for corporate), Maruti True value (sale and purchase of pre-owned cars), Maruti Insurance, and Maruti Finance. Some of the better performing dealers even invested in new facilities and reached untapped markets. While the company's sales network grew to 280 outlets, its services network reached 1,000 outlets in 2005.

As a part of its strategy, the company has struck a partnership deal with State Bank of India and its associate banks, in order to reach out to rural

markets and expand its customer base through organized finance. The Challenge 800, one of the company's initiatives to improve the quality, cost, and material management, and productivity has created entry barrier for the entry of new firm in the segment of small car. Due to this fact, the size of Maruti has increased in terms of net assets, sales and output. The flexible operations helped the company to scale up its production and deliver the right product mix which matches the demand in the market.

With the entry of carmakers like Ford, Hyundai, and General Motors in the automobile industry, the competition has increased further even in the small and medium segments. And, going ahead, Maruti is set to face further challenges as competition heats up. It would need to replicate its '800' success to maintain its dominance. For now, all hopes are pinned on the 'Play boy' Swift.

6.8 ENTRY OF SMALL CAR IN THE AUTOMOBILE MARKET

The Indian automobile industry has undergone transitional phase and has affected all the segments of automobile. This transition has been necessitated by the entrance of international companies accompanied by the infusion of modern technology. The number of automobile firms has increased from 24 in 1990 to 47 in 2006.

At present, all segments in the industry do face challenges on account of oversupply, price wars or a shift in consumer preferences. This is being felt more intensely in the passenger car segment than in other segments of the industry.

Until 1981, there were two dominant players in the Indian Scene – Hindustan Motors and Premier Automobiles. In 1982, Maruti Udyog, a 50:50 joint ventures between Suzuki Motors and the Indian Government introduced

a hunchback car at an affordable price. Gradually, Maruti introduced three new models, creating them different segments and over took HM and PAL with attractive prices and fresh designs. By 1998, Maruti controlled 84 per cent of the Indian car market and 96 per cent of the compact car market.

The Maruti 800, Omni and the Zen dominated the compact segment while HM and Maruti Esteem accounted for the mid segment. Peugeot and Daewoo Cielo entered the markets as premium cars but were unsuccessful in this segment. Peugeot has exited some while the Cielo has been repositioned in the mid segment with a 20 per cent price cost.

The compact car segment is extremely price sensitive. Despite the introduction of modern technology and a quantum leap in quality and safety standards of the passenger car manufactured by multinationals, the on-the roads price will determine the success of the product.

6.9 ENTRY OF PREMIUM CARS

Mercedes, Ford, General Motors, Honda and Mitsubishi have all launched Premium cars priced at over Rs. 7 lakh, and compete in a very narrow market of about 20,000 cars annually. The Premium car segment was chosen by the new entrant as part of a 'Market Entrance' strategy to create brand awareness. Almost all the entrants now have clear plans of introducing new products in the mid size segment as a step towards capturing volumes to make the business viable. Some companies like Ford and Hyundai has also their goods set for entering the small on market in the long run. Customers hold back purchase decisions in anticipation of new car launches, prices cuts, the glamour of the 'millennium' car and other factors.

Under the WTO agreement the Indian government has committed to the removal of quantitative restrictions on imports of automobiles. Free import of new and second hand and the removal of the level content regulations are likely to hit the automobile industry adversely.

In the wake of the automobile industry's growth, the auto component industry has also flourished. Overseas manufacturers have brought in new suppliers, which, in turn, have tied up with the local partners to be available. The entire industry is poised to take off once the volumes grow.

6.10 A CAR FOR INDIAN ROAD

It is very interesting to study the type of car suited to the Indian roads. The growth of automobile firms in India also depends on usage and safety. For this testing of vehicles is done by all automobile firms. Testing is an integral part of the product development process for a new car. It is carried out to ensure that the car will be durable over a long period of customer usage, and be safe when involved in an accident.

The automobile companies undertake pre-condition testing to meet the self-imposed performance standards of the company and to comply with the regularity standards of the government. During the testing phase, the car is tested in the company's own testing laboratories and later in the government lab.

There are various kinds of safety tests done on automobiles, like vehicle crash tests, sled tests, sensor tests, roof crush test, road impact, pedestrian impact and static side door intrusion.

At Ford India limited, which is highly committed to safety, every model developed is seen as a specific application of the science that helps save lives and drastically reduces the risk of injury in the car. In the segment of – previous car, the growth rate of ford is satisfactory.

While testing a car for usage in India one has to take monsoon conditions into consideration. If a car, even after being located in a minimum of 450 mm of water starts at the first attempt, it demonstrates that the car is

really waterproof. Ford also conducts wading tests in a huge water tank filled with 450 mm of water. The car to be tested is driven through this tank, and then tested again with another vehicle coming in the opposite direction creating a 150 mm wave.

It is obvious from the above facts that the established firms try all means to deter the entry of new firms. Similarly, the potential entrants also make all efforts to enter the automobile industry. In all the segments of the automobile industry, there has been entry of new firms and they also became successful firms such as MUL, HHM, Hyundai, TVS Suzuki, LML etc.

Chapter - VII

Size and Growth of Automobile Industry

Chapter – VII

SIZE AND GROWTH OF AUTOMOBILE INDUSTRY

We have made attempts to discuss the growth of automobile industry in terms of net sales, profit, net assets, market share and investments. Regression method has been followed to analyze the growth rate. Theoretical analysis also proves that there is positive relationship between size and growth.

7.1 INTRODUCTION

It has been observed that mostly businesses start initially as local ventures that gradually extend to the surrounding districts, to a whole state, some later on to a whole country and a few even internationally. If a business originated in one of the states in India, its management would be normally by a people from that state. As it extend its operations beyond that states it has to make a major attitudinal change in its evolution as a national company by having managers from different parts of the country and extending its international level.

This chapter attempts to analyze the determinants of growth of Indian automobile firms during 1991-92 to 2005-06. The analysis broadly followed the evolutionary theoretical framework. It is argued that differences among firms in terms of technological acquisition explain much of the firm level difference in growth. It is evident that in an era of economic liberalization, firms with foreign equity trends to grow at higher rate. With a change in the policy, however, imports of capital goods was the only technology variable which enabled firms to achieve higher growth rate. The result broadly confirms the basic tenets of Pensose (1959), Merris (1964), Geroski (1959) and evolutionary theorists.

Edith Penrose (1959) has made a substantial contribution to the analysis of the growth of the firm. In Penrose's conception, a firm is an administrative organization representing a collection of human and material resources for the purpose of producing goods and services for sale on the market. The question arises as to why firms should grow. The process of growth is not automatic in the Penrosian framework; it is a deliberate and conscious choice of the management. The process of growth starts with planning stage. The nature and availability of the managerial services - both entrepreneurial and administrative - may shape the rate and direction of the firm's expansion. If the managerial services are adequate, the firm can sustain higher rate of growth; otherwise, not. Thus, firm's sales and profits may go up.

7.2 SIZE AND GROWTH OF FIRMS

Most of the literature dealing with growth of firms assigned an important role for firm size and its determination. Role of firm size in determining growth is a complex one and the evidence in this relationship is mixed. Baumol (1962) hypothesized a positive relationship between firm's size and performance. However, most of the empirical literature found either size to be unimportant in determining growth (Buckley et al 1978) observed a inverse relationship between firm size and growth.

Siddarthan et al (1994) found a positive relationship between firm size and growth in the presence of variables such as technological capabilities, age of the firm and capital intensity.

7.3 SIZE AND GROWTH OF THE INDIAN AUTOMOBILE INDUSTRY

The Indian Automobile Industry produced 8.5 million vehicles in 2004-05 amounting to around USD 25 billion. During the financial year 2005-06, Indian Automobile Industry produced more than 9.7 million vehicles amounting to almost USD 28 billion. The growth in production was

15%. India is the second largest market for two wheelers in the world. However, in value terms, the value of the market for passenger cars and CVs is higher than the market size for two wheelers. Growth arises from proper capacity utilization, economics of scale, technological innovation, and etc. Size of the firm depends more or less on nature of its establishment, whether a firm is small or large. The size of an automobile firm at firm-level depends on economies of scale, net sales, net fixed assets and the quantum of investment which will be discussed in this Chapter.

7.4 PROFIT AND SIZE

Apart from examining the relationship between firm's size and growth extensively, several efforts have also been made to analyse the relationship between profits and growth. Marris (1964) pointed out that there is a direct relationship between profitability and growth because profitability determines a firm's ability and willingness to grow. The growth of automobile firms in India is associated with the profit. It has been well recognized when automobile firms grow, profit in such firms takes place

7.5 THEORETICAL BACKGROUND LINKING TECHNOLOGY AND FIRM GROWTH:

Technology plays important role in the market structure and non-price variables in determining growth and performance of firms. Schumpeterian theory demonstrated the role of technology and innovation in stimulating growth and development (Schumpeter, 1943). According to Schumpeter (1943) P.84 "a competition which commands a decisive cost or quality advantage and which strikes not at the margin of the profits and outputs of the existing firms but at their foundations and their lives" more effective than the traditional price competition. The automobile firms like Hero Honda, Hyundai, MUL, BAL, M&M, Tata, Ashok Leyland have adopted technological innovations and they are going faster than others who are still using existing technology. The size of these firms in terms of sales, net asset

and investment is larger than other automobile firms. As result, the growth rates of these firms are very high.

Penrose's (1959) theory of growth of the firm also discusses the role of technological innovations along with demand preferences in market conditions in providing the impetus for growth. The literature presented above suggests an important role for technology in determining growth of firms. The role of technology is largely governed by the technological regime in which the firm operates.

Let us now analyze the growth of Indian automobile firms

7.6 A NOTE ON GROWTH RATES

Regression analysis has been used to study the growth rates of automobile firms in India

In all five growth rates presented for each variable like sales, first four were two point compound growth rates using $P_1 = P_0(1 + R/100)^N$ where P_0 is base year value P_1 is the last year value and N is the period. R is expressed as percentage growth rate. In fifth type the growth rate is obtained on the basis of fitting a semi log relation for the entire or maximum time pan available each case .

$Y = \text{EXP}(A + Bt)$ or its linear form by taking logs

$\text{Ln}(Y) = A + B * t$

Where Y is the data value for N data points,

t is time in years .

The resulting B gives the growth rate expressed in percent form by

$GR = 100 * (\text{exp}(B) - 1)$

Exp is "e" and $\text{Ln}(Y)$ is log of Y value to base e called as the natural log.

The growth rate obtained by regression model takes into account all N values of Y and not just the end points P0 and P1 .In most of the cases GR based on all N points by compound growth rate and that obtained by regression method will be generally close but as stated GR by regression model is a better overall measure.

The overall goodness fit of the regression is tested by F value while significance of B the regression coefficient is tested by its t vale. * indicates significant at 5 % LOS(Level of significance) and ** indicates significant at 1% LOS (more stronger) This is also indicated in each GR obtained by regression method..

If for any variable the data is not sufficient to compute it is set to zero. There is no case of 0 growth rate. We shall now illustrate for table no 1 which gives data for M&HCVs. The values are in Rs crores.

**Table 7.1 : M&HCVS
(Sales in Rs. Crore)**

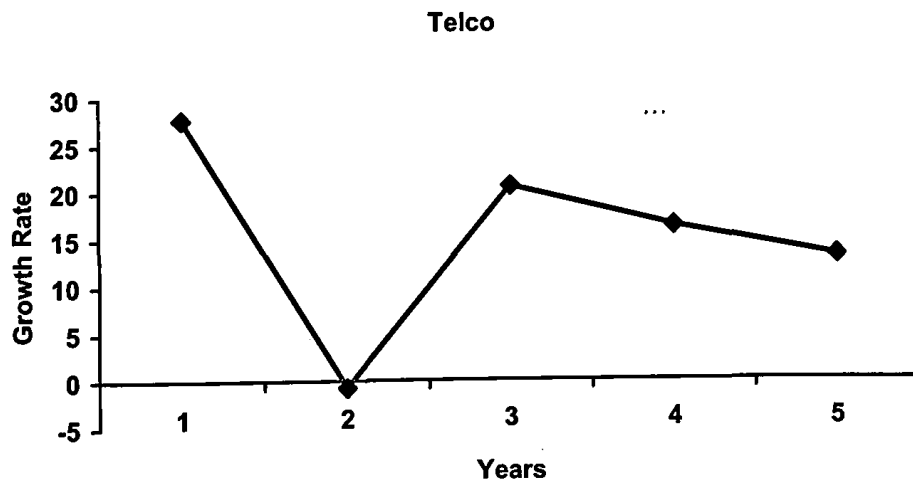
Year	Yr	Telco	AL	HM	Total
1991-92	1.00	2150.00	616.00	0.00	2766.00
1992-93	2.00	663.33	796.72	0.00	1460.05
1993-94	3.00	1865.00	978.03	0.00	2843.03
1994-95	4.00	2900.00	1253.81	7.21	4161.02
1995-96	5.00	4025.39	1629.94	18.00	5673.33
1996-97	6.00	4900.00	2100.01	22.00	7022.01
1997-98	7.00	3000.00	1600.00	20.00	4620.00
1998-99	8.00	2700.00	1703.30	15.00	4418.30
1999-00	9.00	3755.13	2292.42	6.00	6053.55
2000-01	10.00	3093.63	1995.82	7.00	5096.45
2001-02	11.00	3752.00	2025.43	0.05	5777.48
2002-03	12.00	5420.00	2525.63	0.00	7945.63
2003-04	13.00	7300.00	3393.80	0.00	10693.80
2004-05	14.00	9610.00	4151.00	0.00	13761.00
2005-06	15.00	9894.90	5191.55	0.00	15086.45
Total		65029.38	32253.46	95.26	182928.1

Source : Industry : Market size and Share (CMIE) Various Issues.

Compound Growth rates	Telco	AL	HM
y1-y6	17.91	27.79	0
y6-y11	-5.20	-0.72	0
y11-y15	27.43	20.71	0
y1-y15	11.52	16.44	0
By Regression	13.37	13.22	-40.57
significance			
F	**	**	NS
t	**	**	Ns

It can be seen that both regressions are significant represents a growth rate of 13.3% for Telco and AL. For HM the data is not enough to find out either by Compound method or by regression method. For the years 6-11 compound rates are negative while the overall growth rates are 11.52 and 16.44 percent which compares near about that obtained by regression method. The HM values are going down 18 to .06 for which we have data.

NS indicates that the regression is no good fit for the partial data. The graphical representation is given below for Telco and All



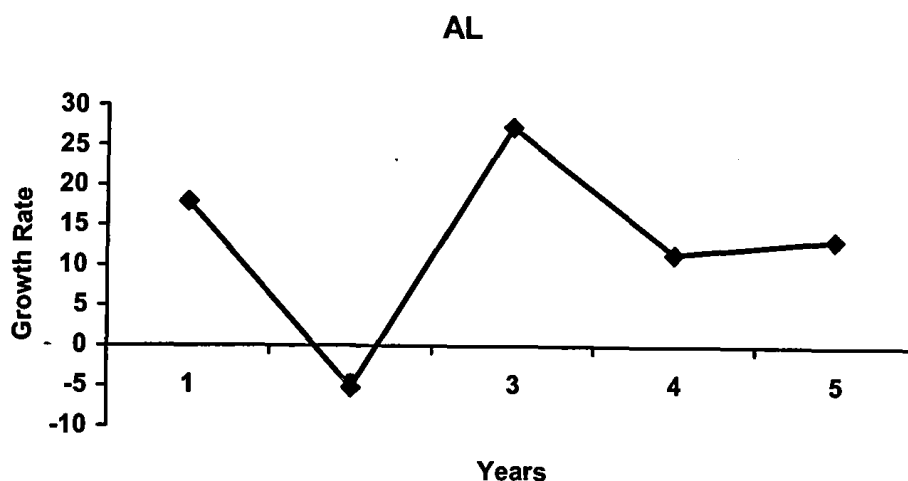


Fig. 7.1 : Sales in Rs. Crore

The growth rate of Telco and ALL has been around 11.52 percent and 16.44 for a period of 15 years (1991-2006) respectively as indicated in the above graph.

**Table 7.2 : Jeeps / MUVs / SUVs
(Company - Wise Trends in Sales (in Rs. Crore))**

Year	Yr.	M & M	MUL	HM	Bajaj Tempo	Telco	Force Motors	Total
1991-92	1	564.22	17.54	0.00	0.00	0.00	0.00	581.76
1992-93	2	721.66	12.19	0.00	0.00	0.00	0.00	733.85
1993-94	3	979.64	13.05	2.32	0.00	0.00	0.00	995.01
1994-95	4	995.06	15.86	4.04	0.00	0.00	0.00	1014.96
1995-96	5	1582.02	229.00	0.00	0.00	0.00	0.00	1811.02
1996-97	6	2032.19	150.00	85.00	400.00	1200.00	0.00	NA
1997-98	7	2064.06	145.00	135.00	300.00	1300.00	0.00	3944.06
1998-99	8	2074.05	140.00	110.00	175.00	1000.00	0.00	3499.05
1999-00	9	2207.34	230.00	100.00	210.00	1039.35	0.00	3787.73
2000-01	10	1893.79	172.00	125.00	113.44	1022.67	173.02	3499.92
2001-02	11	1812.21	142.00	180.00	0.00	1011.08	202.00	3347.29
2002-03	12	1922.00	95.00	42.18	0.00	934.03	244.00	3237.21
2003-04	13	2590.00	93.00	36.00	0.00	1500.00	400.00	4619.00
2004-05	14	3100.39	156.03	13.04	0.00	3100.39	362.00	6731.85
2005-06	15	3612.07	64.02	8.81	0.00	3612.07	403.13	7700.10
Total		28150.70	1674.69	841.39	1198.44	15719.59	1784.15	30666.78

Source : Industry : Market size and Share (CMIE) Various Issues.

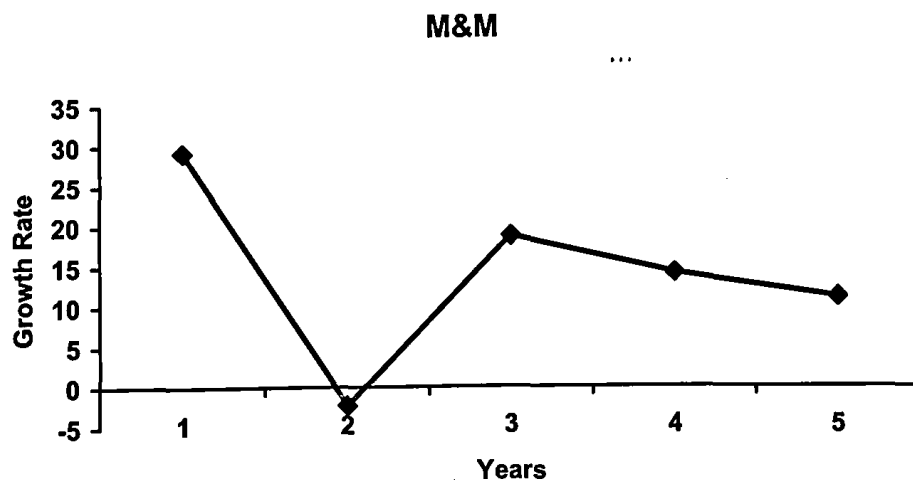
Note : The name of Bajaj Tempo is now changed to Force Motors.

Compound Growth rates	M&M	MUL	HM	TELCO
y1-y6	29.21	53.61	0.00	0.00
y6-y11	-2.26	-1.09	16.19	-3.36
y11-y15	18.82	-14.73	-45.30	29.00
y1-y15	14.18	9.69	0.00	0.00
By Regression	11.14	15.62	-23.67	11.32
significance				
F	**	*	**	*
t	**	*	**	*

We now present data on company-wise trends in sales. The figures are in Rupee term in crores.

Barring growth for the years 6-11 the growth rates for HM are negative .It is -23.67 by regression method.. By regression method the rates are 11.4,15.62 and 11.2 for M & M ,MUL and Telco .. Maximum GR is reported by M UL during the period 1-6.

We have no sufficient data for Bajaj Tempo. Force motors and Toyota K.M have scanty data for growth rate analysis. Graphical representation follows



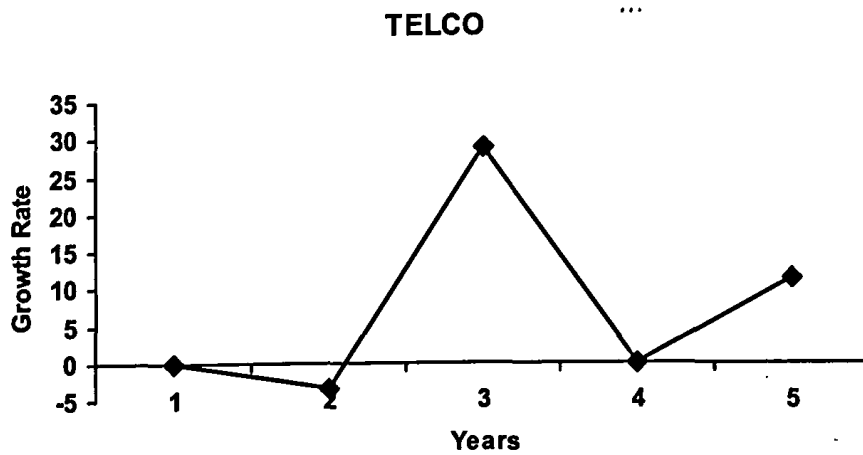
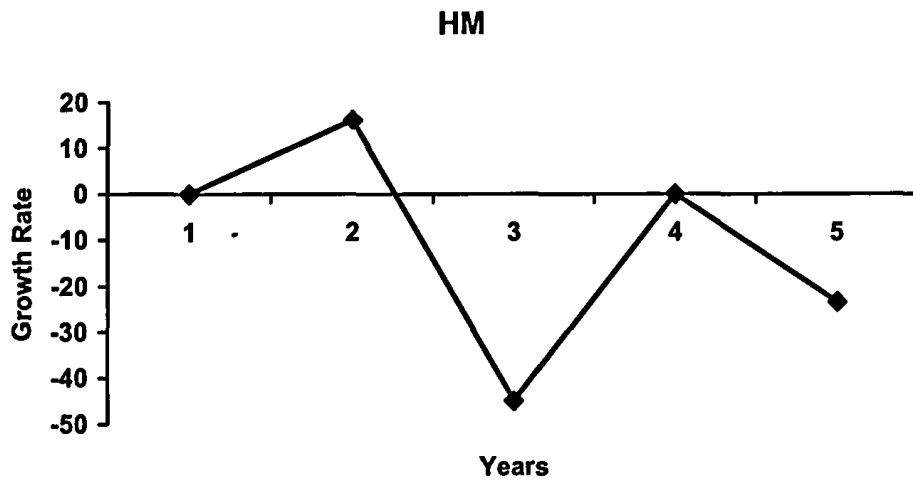
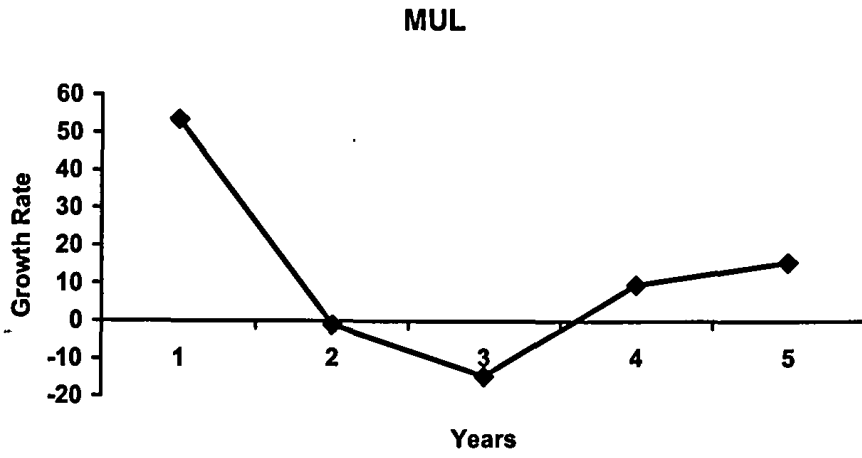


Fig. 7.2 : Company - Wise Trends in Sales

**Table 7.3 : Passenger Cars
(Company - Wise Trends in Sales (in Rs. Crore))**

Year	YR	MUL	DMI	HM	PAL	TELCOM	HMI	Honda Car
1991-92	1	1725.76	0	315	468.85	0	0	0
1992-93	2	1974.41	0	447.32	321.12	100	0	0
1993-94	3	2545.06	0	556.54	460.95	280	0	0
1994-95	4	3813.07	0	600	460.95	562.21	0	0
1995-96	5	5979.93	48.02	745	393.41	569.23	0	0
1996-97	6	7265	875.07	676	292.58	270.73	0	0
1997-98	7	7713.08	333.02	600	292.58	175	0	0
1998-99	8	7300.93	341.03	675	104.24	132	0	0
1999-00	9	8540.06	1028.21	1168	18.43	1589.73	0	0
2000-01	10	8187.06	971.28	1103.89	2.61	1248.42	2892.01	685.72
2001-02	11	8284	242.21	856.95	0.22	1923	3237.41	808.34
2002-03	12	8441.02	242.21	845	0.99	2168	3794.57	935.29
2003-04	13	10355.03	100	612.7	0	2820	5490.52	1516.33
2004-05	14	1240.05	0	802.42	1.55	4000	6930.17	2525.76
2005-06	15	13801.09	0	629.12	7.14	4509.98	7867.72	2928
Total		97165.55	4181.05	10632.94	2825.62	20348.3	30212.4	9399.44

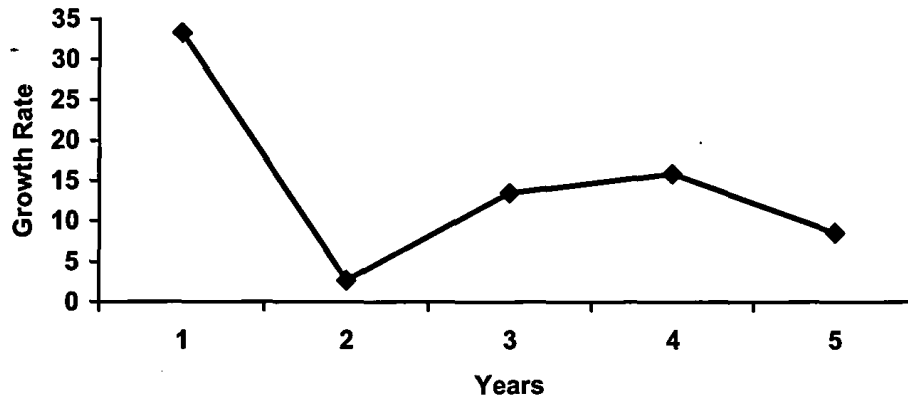
Source : Industry : Market size and Share (CMIE) Various Issues.

Compound Growth rates	MUL	DMI	HM	PAL	TELCO	HMI	Honda Car
y1-y6	33.3	0	16.5	0	0	-9	0
y6-y11	2.67	-22.65	4.86	0	0	-76.27	48.01
y11-y15	13.6	0	-6	0	0	100.56	18.58
y1-y15	16	0	5.06	0	0	-25.83	0
By Regression	8.69	0.85	-4.28	0	0	-41.72	-43.65
significance							
F	Ns	Ns	*			**	**
t	Ns	Ns	*			**	**

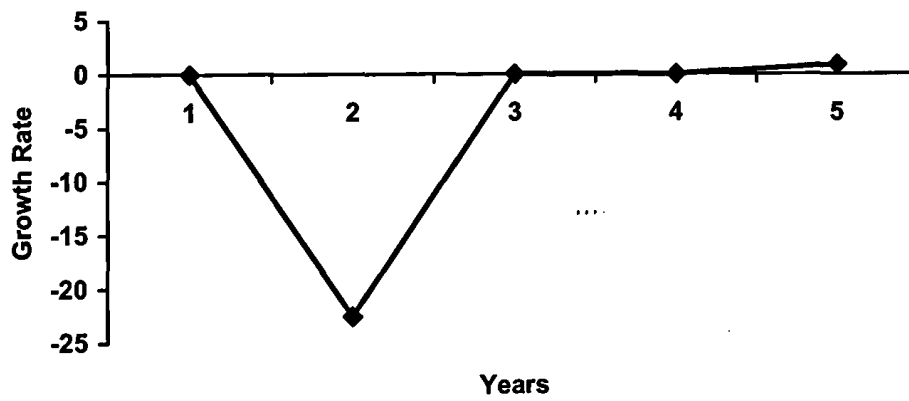
Growth rates have been presented for fuller data series in the table. Both PAL and TELCI show negative growth rates while MUL and DMI show positive growth rates maximum is that of MUL 8.89 per cent. MUL show consistently growing sales, while there is no good trend for other series. Strange enough the regression for negative cases namely that of PAL and TELCO show significant relationships, though negative.

Thus passenger cars sales are erratic for companies taken above. The relevant graphs follow

MUL



HM



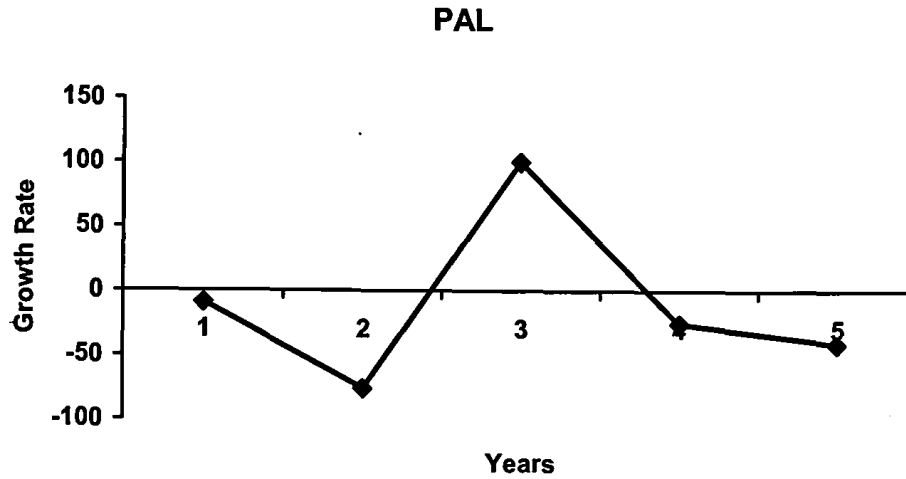


Fig. 7.3 : Company - Wise Trends in Sales

**Table 7.4 : Motor Cycles
(Company - Wise Trends in Sales (in Rs. Crore))**

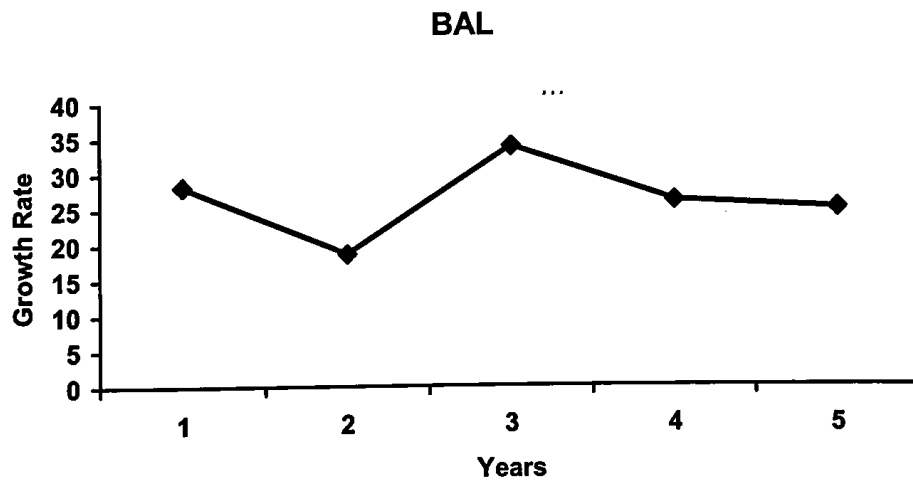
Year	YR	BAL	HH	TVS. Suzuki	Eicher	Soor. A	Escorts	LML	KIEN Eng
1991-92	1	230	253.28	63.36	0	0	246.8	0	0
1992-93	2	240	279.53	65.04	0	0	225.35	0	0
1993-94	3	290	337.47	118.97	44.53	0	280.47	0	0
1994-95	4	540	432.84	201.93	71.16	5.75	425.19	0	0
1995-96	5	650	572.19	304.84	86.86	8.76	0	0	0
1996-97	6	800	69.07	407.92	99	8.29	0	0	0
1997-98	7	1010	1052.85	53.06	85.26	9.97	0	0	0
1998-99	8	1150	1413.45	691.91	116.87	12.55	0	0	0
1999-00	9	1143.8	2147.65	807.46	121.06	12.55	0	0	0
2000-01	10	1276.07	3024.53	9774.21	106	7.91	0	200.94	0
2001-02	11	1893.04	4262	1188.69	122.39	6.93	0	187.15	119.55
2002-03	12	2608.02	4862.09	1952.94	147.77	0	0	528.19	140.79
2003-04	13	3185.02	6468.67	1940.05	147	0	0	528.19	150.13
2004-05	14	4417	8234.03	1845.66	0	0	0	283.33	66.62
2005-06	15	6108.04	9604.17	2053.27	0	0	0	283.33	66.62
Total		25540.99	43013.82	21469.31	1147.9	72.71	1177.81	2011.13	543.71

Source : Industry : Market size and Share (CMIE) Various Issues.

Rates computed for first three companies for which fuller data were available.

Compound Growth rates	BAL	HH	TVS
y1-y6	28.31	-22.88	45.13
y6-y11	18.8	128.06	23.85
y11-y15	34.02	17.64	11.53
y1-y15	26.30	29.65	28.2
By Regression	25.22	35.22	33.36
significance			
F	**	**	**
t	**	**	**

All three regressions are significant and the growth rates by regression method for BAL, HH and TVS work out to 25.27,35.22 and 33.35 per cent. Barring two all other compound growth rates are as well positive indicating year wise growth of company wise sales covered. About seven companies for which fuller data is not available have not considered for growth rates. For all three companies there dip in sales for the period 11-15. That there growing demand for motor cycles is reflected in the sales figures.



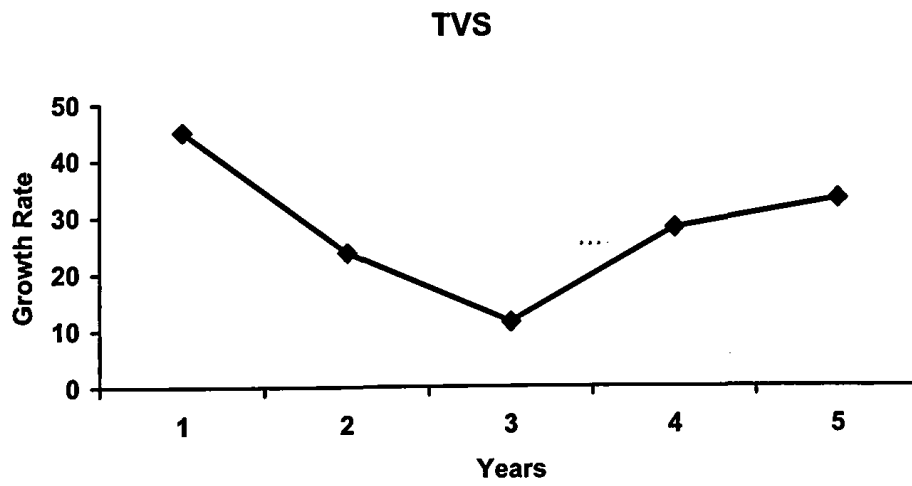
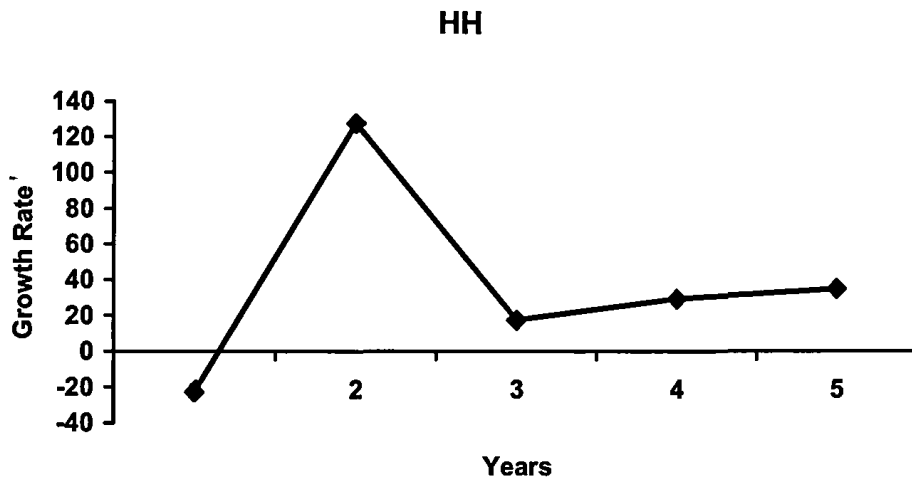


Fig. 7.4 : Company - Wise Trends in Sales

**Table 7.5 : Scooters
(Company - Wise Trends in Sales (in Rs. Crore))**

Year	Yr	BAL	LML	Kinetic HM	MAH. S	TVS. Suz	Guj Nar. A	Vespa	Total
1991-92	1	650	121.07	479.53	12.68	0	7.45	10.05	1280.78
1992-93	2	576.59	121.07	164.62	149.98	0	7.45	10.05	1029.76
1993-94	3	658.47	238.19	148.4	165.49	0	0	1.09	1211.64
1994-95	4	100.76	321.12	168.8	173.9	0	0	0	764.58
1995-96	5	132.38	479.53	295.16	219.71	7.75	0	0	1134.53
1996-97	6	143.12	575.11	306.55	276.2	14.05	0	0	1315.03
1997-98	7	1202.23	693.83	327.77	262.14	16	0	0	2501.97
1998-99	8	1452	760.94	294.58	306.31	186.24	0	0	3000.07
1999-00	9	1382.01	666.95	357.49	309.13	228.27	0	0	2943.85
2000-01	10	998.05	376	391.04	205.74	270.58	0	0	2241.41
2001-02	11	1037.01	489.15	330.03	117.79	277.12	0	0	2251.1
2002-03	12	749.06	160	290.95	60.94	292.58	0	0	1553.53
2003-04	13	526.06	160	198.86	36.05	386.19	0	0	1307.16
2004-05	14	314.06	136.21	136.4	29.75	485.56	0	0	1101.98
2005-06	15	267	212.51	136.4	20.96	554.59	0	0	1191.46
Total		10188.8	5511.68	4026.58	2346.77	2718.93	14.9	21.19	24828.85

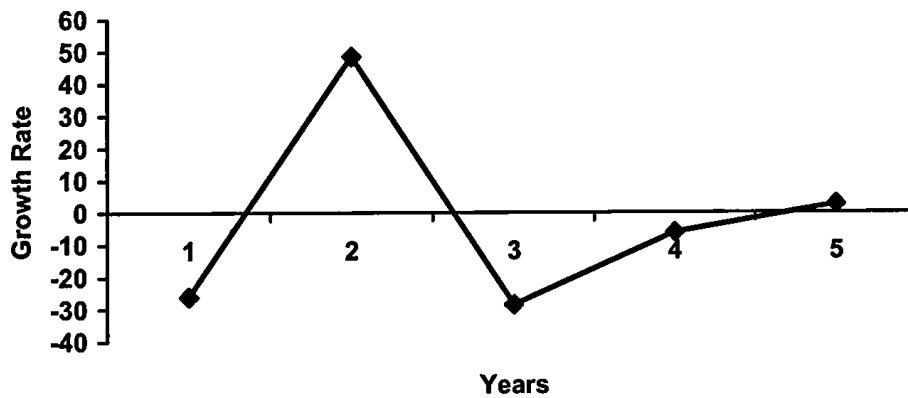
Source : Industry : Market size and Share (CMIE) Various Issues.

Compound Growth rates	BAL	LML	Kinetic HM	MAHS Scooter	TVS Suzuki
y1-y6	-26.11	36.56	-8.55	85.9	0
y6-y11	48.59	-3.18	1.48	-15.67	81.5
y11-y15	-28.76	-15.35	-16.19	-29.19	14.88
y1-y15	-6.15	4.1	-8.58	3.65	0
By Regression	2.61	0.34	-1.9	-6.99	52.2
significance					
F	NS	NS	Ns	NS	**
t	Ns	Ns	Ns	Ns	**

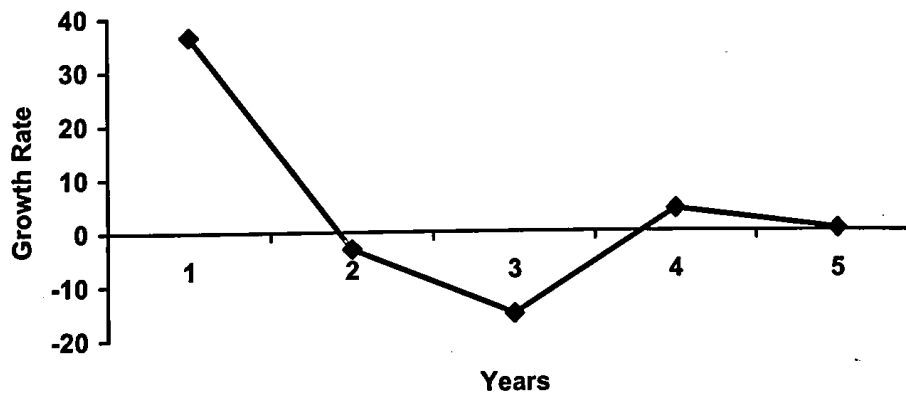
For scooters the growth rate picture is very dismal, For several companies there is negative growth rates except LMIL for two point rates. The

rates based on all or whatever period is available is also either very small or negative for Kinetic and MAHS During the period under review for major 5 companies there is lot of variation in sales . We have covered five out of six mentioned in the above table. The regressions are also insignificant except for TVS Suzuki for which a rate of 52.2 was reported . The regression was significant at one percent LOS s as can be seen with two stars both for F and t value. GR by regression for first four companies were not significant. Barring TVS other four show erratic figures in sales. The graphs are given below

BAL



LML ...



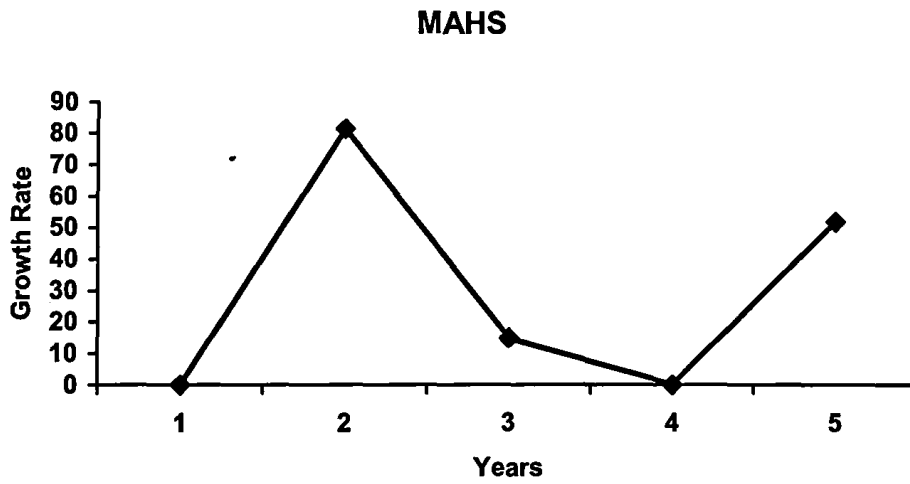
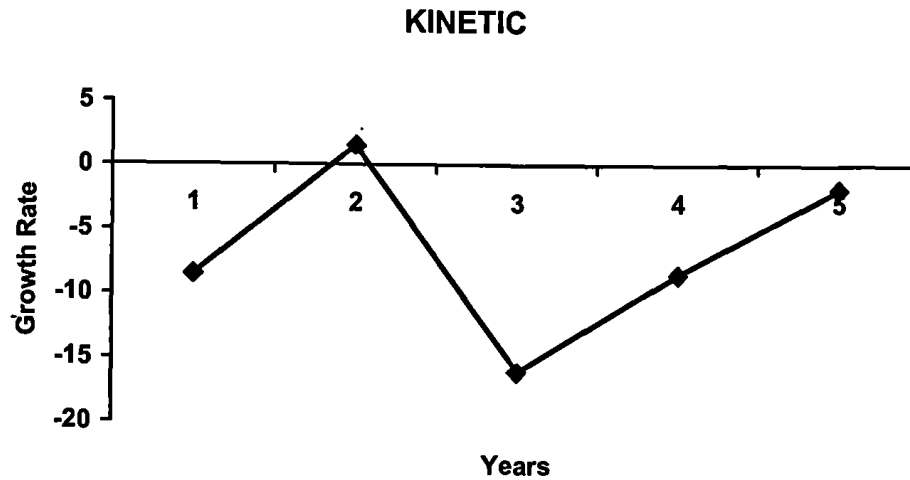


Fig. 7.5 : Company - Wise Trends in Sales

For TVS Suzuki we don't have data for 1991-95 that is for first four years and as such the graph is not presented. For growth rates but for data series from 1995-96 and 11 years ending 2005-06.

TVS SALES

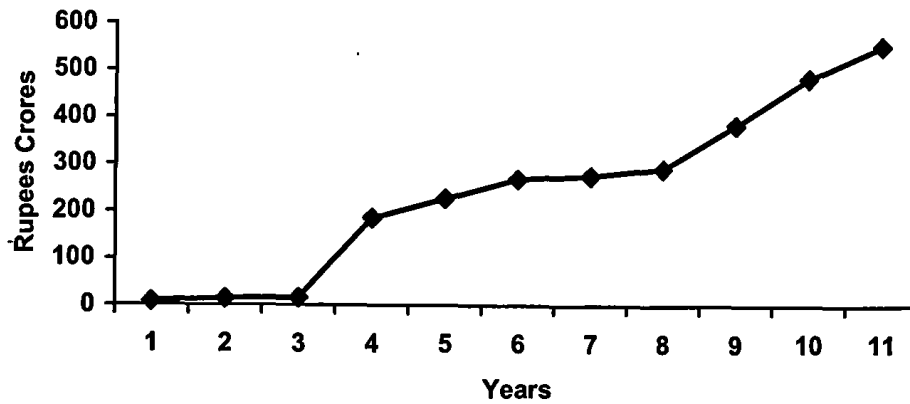


Fig. 7.6 : TVS Trends in Sales

**Table 7.6 : Light Commercial Vehicles
(Company - Wise Trends in Sales (in Rs. Crore))**

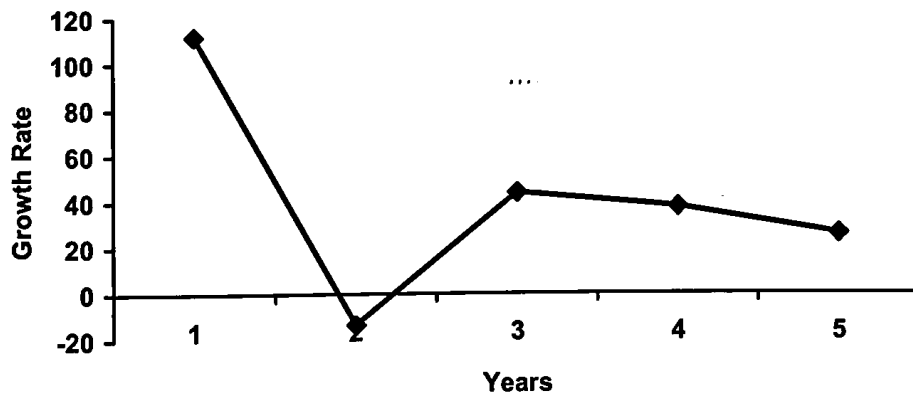
Year	YR	Telco	Bajaj Tem	EM	S Mazda	M&M	AL
1991-92	1.00	62.36	224.10	130.00	75.32	0.00	0.00
1992-93	2.00	18.00	267.75	108.51	82.76	0.00	0.00
1993-94	3.00	1050.70	429.63	127.99	107.23	75.37	0.00
1994-95	4.00	1600.00	484.03	194.37	137.98	120.00	40.00
1995-96	5.00	2400.00	623.41	244.69	171.60	150.00	95.00
1996-97	6.00	2674.93	197.00	299.94	173.77	145.00	55.00
1997-98	7.00	1915.00	178.00	241.28	158.89	180.00	43.00
1998-99	8.00	1750.00	200.00	244.99	143.16	134.25	25.00
1999-00	9.00	1736.50	260.00	326.45	200.57	241.70	24.00
2000-01	10.00	1859.00	0.00	415.10	255.29	226.20	15.05
2001-02	11.00	1292.75	0.00	494.37	320.75	347.12	11.65
2002-03	12.00	1355.00	0.00	655.26	401.11	963.03	9.00
2003-04	13.00	2700.00	0.00	856.66	519.16	1356.06	26.00
2004-05	14.00	3750.00	0.00	1354.15	646.14	1814.00	27.00
2005-06	15.00	5558.42	0.00	1420.42	666.96	1853.53	59.32

Source : Industry : Market size and Share (CMIE) Various Issues.

Compound Growth rates	Telco	Bajaj Tempo	EM	S. Mazda	M&M	Ashok Leyland
y1-y6	112.07	-2.54	18.20	18.19	0.00	0.00
y6-y11	-13.53	0.00	10.51	13.04	19.07	-26.68
y11-y15	44.00	0.00	23.50	15.77	13.80	38.47
y1-y15	37.81	0.00	18.62	16.86	0.00	0.00
By Regression	26.05	-4.78	19.26	16.44	30.97	-7.66
significance						
F	**	NS	**	**	**	Ns
t	**	NS	**	**	**	NS

We now consider light commercial vehicles for which fuller data is available. We consider six companies. Growth rates by regression method are quite high except for BT and AL for which negative growth rates were reported. Compound growth rates, wherein data is available compares well with regression rates. Telco fares well with tow point rate for 15 years at 37.81 and 28.05 for regression. Regression models are insignificant for BT and AL, incidentally there rates are also negative.

TELCO



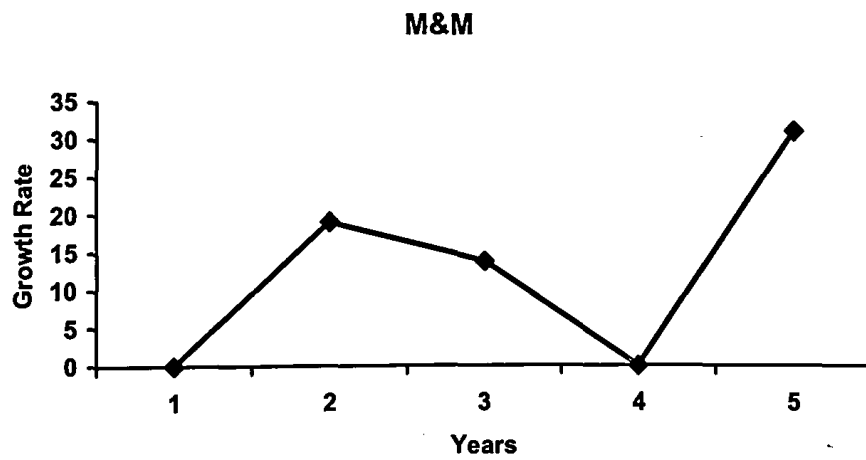
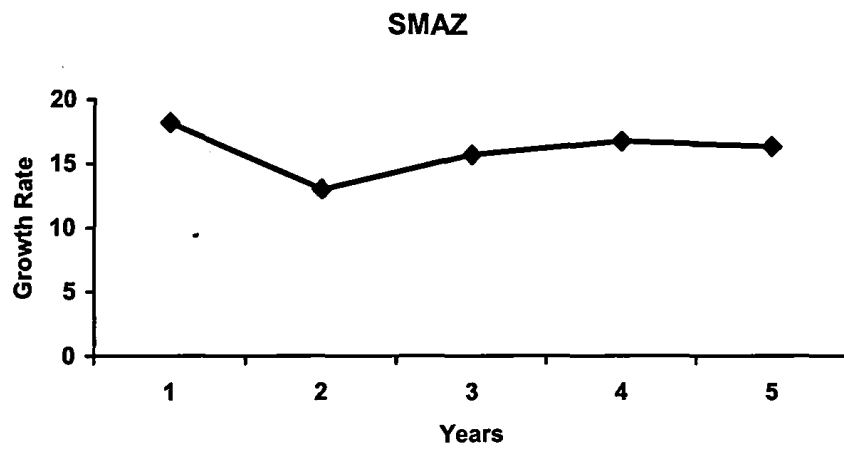
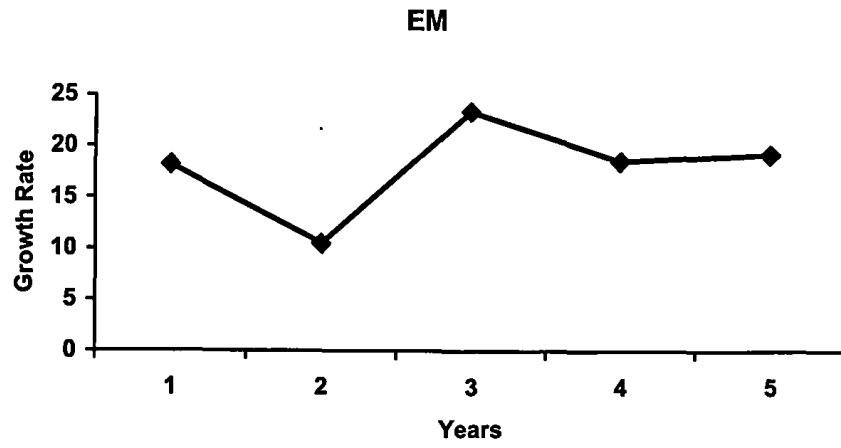


Fig. 7.7 : Company - Wise Trends in Sales

In growth rate chart for M&M if the rates could not be computed the rate is shown as zero.

Note : in all the charts we have given they for five type of rates four by compound rate method the fifth one by regression methods

Table 7.7 : Growth of Automobile Industry in terms of Financial Aggregates

Rs Crores.

Year		Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1990-91		8297.5	219.3	1509.9	2021.3	621.3
1991-92	1	9262	75.3	1627	2294.7	730.7
1992-93	2	12718	-120.1	1896.9	3723.3	1063.7
1993-94	3	15698	298.4	2451.1	4186.2	802
1994-95	4	21279.7	990.2	4995.6	5059	700.6
1995-96	5	28272.3	1652.1	7131	6757.8	787.2
1996-97	6	33647.2	1936.1	10688.4	8064.3	1219.5
1997-98	7	32484.5	1932.2	11808.4	8991	1471.3
1998-99	8	31239	1178.1	12957.9	13780	1193.4
1999-00	9	51853	1244	17746	19163	5307
2000-01	10	52656	352	17025	20947	4415
2001-02	11	50398	27	13419	20087	6435
2002-03	12	56524	10101	14198	19269	6838
2003-04	13	75549	3715	20556	18969	12068
2004-05	14	97111	4790	24930	19801	13184
2005-06	15	108415	6782	30507	20870	15240
Total		685404.2	35172.6	193447.2	193983.6	72076.7

Source : Financial Aggregates and Ratios (CMIE) Various Issues.

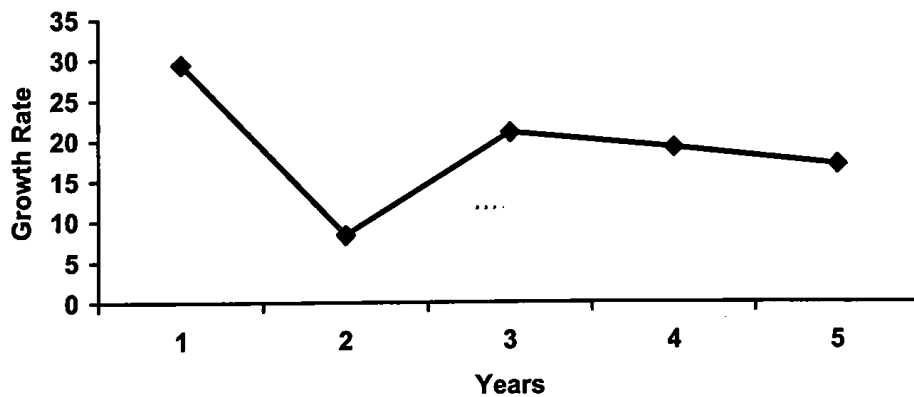
Compound	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
Growth rates					
y1-y6	29.44	91.43	45.71	28.57	10.78
y6-y11	8.41	-57.43	4.65	20.02	39.46
y11-y15	21.1	201.99	17.85	0.76	18.81
y1-y15	19.21	37.91	23.29	17.08	24.23
By Regression	17.13	14.76	21.28	17.15	28.03

Here we consider the growth rates that were reflected in Financial aggregates in the Automobile industry over 15 years 1990-91 to 2005-2006. The aggregates considered are Net sales, Profit after tax, Net worth, Net fixed assets and investments.

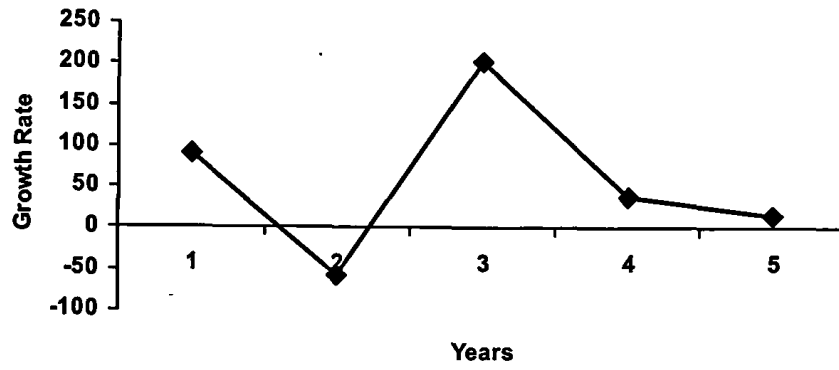
All five heads show higher rates for the first five years under review as given in the above table. It declined in next five years except of investment. The overall growth rates are 19.21, 37.91, 23.29, 17.08 and 24.23 for five heads, Profit after tax has the largest growth rate of 37.91. This shows the rate for two point data, in fact for the last four year the rate reported is as high as 202 per cent. The overall rate reflected by regression methods as 14.76.

The highest growth rate seems to be 28.03 for investments under regression model. The rather erratic movements of profit after tax and net worth should be looked into

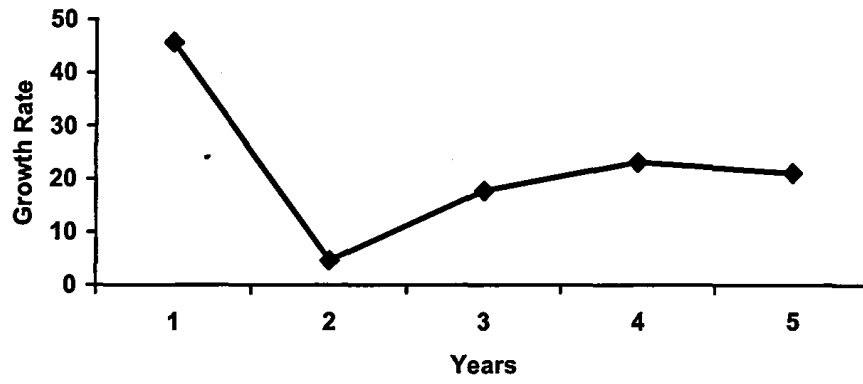
NET SALES



PROFIT AFTER TAX

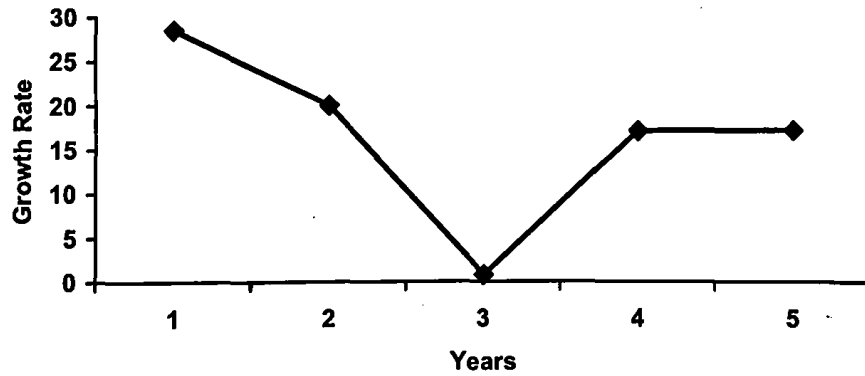


NET WORTH



...

NET FIXED ASSETS



INVESTMENTS

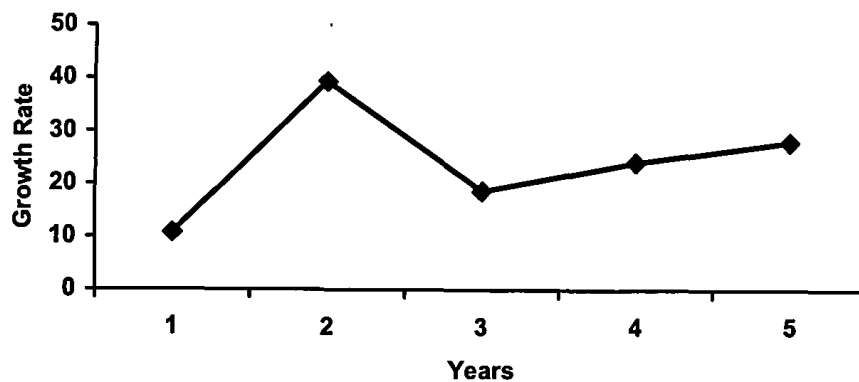


Fig. 7.8 : Growth of Automobile Industry in terms of Financial Aggregates

Table 7.8 : Growth of Commercial Vehicle in terms of Financial Aggregates

in Rs crores.

Year	Year	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1991-92	1	4055	141	925.4	934.1	447.9
1992-93	2	3917.8	-19.5	1109.5	1065.4	204.3
1993-94	3	51505.9	82	1256.6	1311.6	213.7
1994-95	4	7230	386.3	2407.9	1863.4	418.3
1995-96	5	9733.5	674.3	3375.6	2399.2	742.4
1996-97	6	11968.6	891.2	455	3026.6	887.6
1997-98	7	9010.9	312.6	4520.4	3461.5	888.2
1998-99	8	8198.7	-96.3	4310.3	3725.2	1094.5
1999-00	9	10615.2	-110.9	4278.2	4655.5	1331.9
2000-01	10	10119.8	-401.5	3713.5	4578.9	1533.1
2001-02	11	10935.9	-41.4	3666.2	4483.5	1317.6
2002-03	12	13387.1	497.3	3767.9	4306	1483.5
2003-04	13	19243.8	1144.7	4980.7	4303.7	3329.8
2004-05	14	24857.5	1494.8	5702.3	4544.9	3252.5
2005-06	15	33304	1802	7685	6379	2655
Total		231633.6	6949.1	52990	51780.5	19917.5

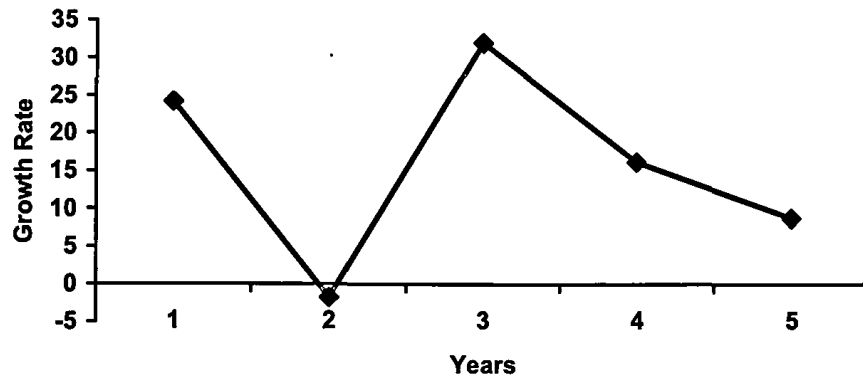
Source : Financial Aggregates and Ratios (CMIE) Various Issues.

Compound Growth rates	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
y1-y6	24.16	0	-13.23	26.5	14.66
y6-y11	-1.78	0	51.78	8.18	8.22
y11-y15	32.1	0	15.98	7.31	5.04
y1-y15	16.23	0	16.32	14.71	13.55
By Regression	8.76	0	14.42	13.09	20.01
significance					
F	*	0	**	**	**
t	**	0	**	**	**

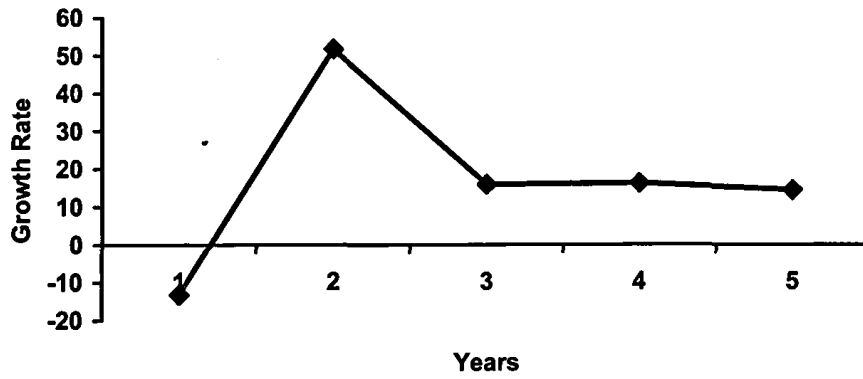
In this table we present Financial Aggregates for commercial Vehicles for the period under review. Profit after tax was not considered as it has several negative values. All the four regressions were significant at 1 % level. and Growth rates reported were 8.76,14.42,13.09 and 20.01 for Net sales, Net worth , Net fixed assets and Investments. The corresponding compound rate for 15 year period 16.23, 6.32, 14.71, and 13.55. However for all heads there is erratic changes in all as can be seen from the compound growth rates by two point compound growth rates.

The regression GRs are all lower than those of overall Automobile Industry seen elsewhere.

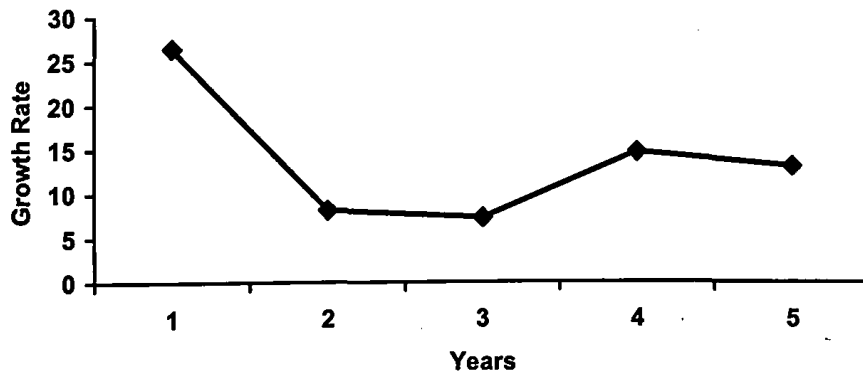
NET SALES



NET WORTH



NET FIXED ASSETS



INVESTMENTS

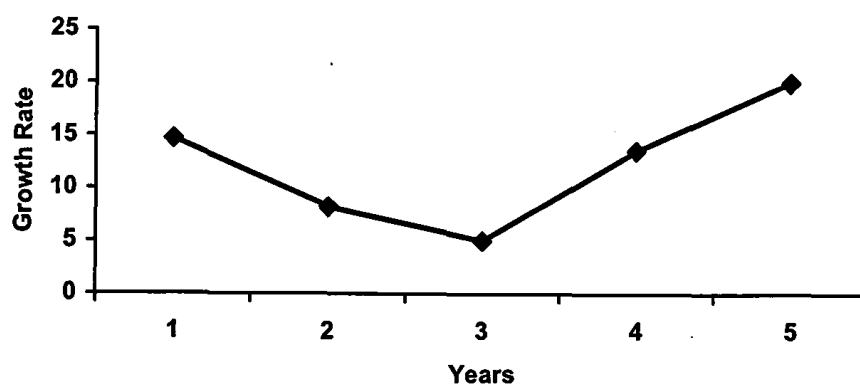


Fig. 7.9 : Growth of Commercial Vehicle in terms of Financial Aggregates

Table 7.9 : Growth of Passenger Cars in Terms of Financial Aggregates in Rs Crores

Year	Yr	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1990-91		2742.8	37.2	515.7	663.4	785
1991-92	1	3132.4	-41.5	571.6	760.6	813.1
1992-93	2	3503.8	-9.7	627.6	997	76.7
1993-94	3	4557.3	152.4	1084.6	1257	325.9
1994-95	4	5944.8	310.7	1569.4	1424.3	1163.9
1995-96	5	9108.3	609.2	2503.1	2177.1	1507.3
1996-97	6	10980	526.7	3488.5	2393.7	1186.8
1997-98	7	11029.5	1045	4468.4	2371.1	1768.8
1998-99	8	11357.6	569	5717.7	7881.1	1438.2
1999-00	9	15322.5	354.6	6831.5	927505	1484.5
2000-01	10	16570.7	-576.7	7194.6	10460.9	1068.6
2001-02	11	16549.1	-434.2	6192.5	10892.1	1097.4
2002-03	12	17676.3	-300.8	6207.5	10576	1008.6
2003-04	13	22485.5	953.4	7518.8	6471.1	2869.7
2004-05	14	29325.4	1390.6	9438.1	7404.1	2894.7
2005-06	15	40090	2531	11745	6346	3804
Total		220376	7116.9	75674.6	999580.5	23293.2

Source : Financial Aggregates and Ratios (CMIE) Various Issues.

Compound Growth rates	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
y1-y6	28.51	0	43.58	25.77	2.85
y6-y11	8.55	0	12.16	35.39	-1.55
y11-y15	24.75	0	13.65	10.24	28.22
y1-y15	19.97	0	24.09	16.36	11.65
By Regression	17	0	22.63	22.51	17
significance					
F	**	0	**	*	**
t	**	0	**	*	**

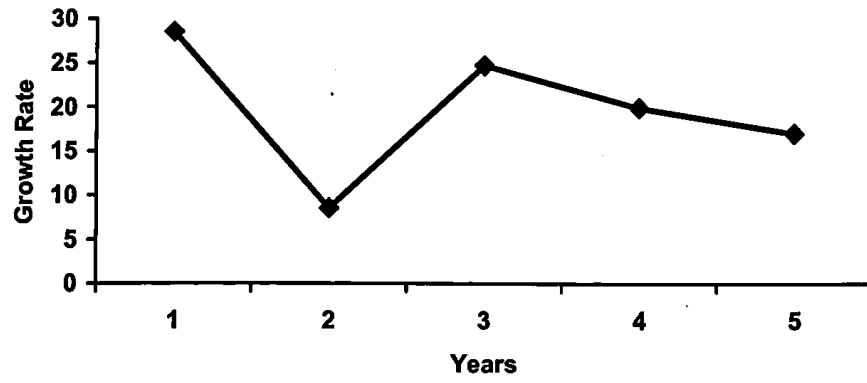
In this table we work out the compound and regression growth for growth of Passenger cars in terms of Financial aggregates Profit after tax is not considered as contains negative cells. All four regression were significant at 1 per cent LOS for F and t of B values. So the corresponding growth rates are to be accepted without doubt. They are 17.8, 22.63, 22.5 and 16 for Net sales, Net worth, Net fixed assets and Investments.

These rates fairly compare with compound rates based on all the 15 years (n=14)

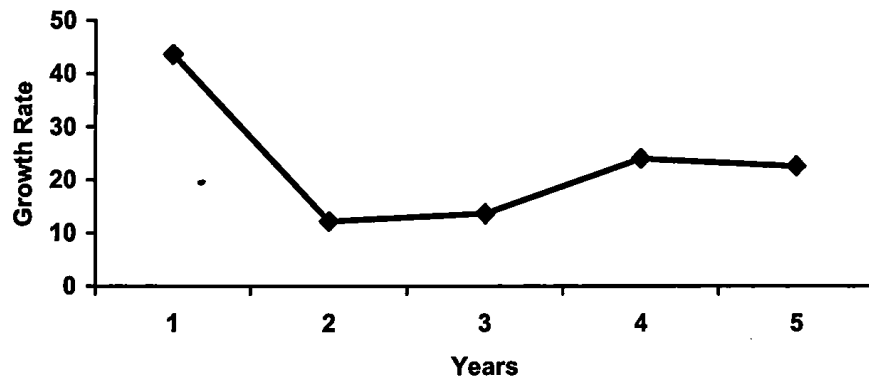
There is difference between rates for period 1-6, 6-11, 11-15 and over all rate for 1 to 15 years. Better will be accept the regression rate. The rates fairly compare for Net sales and net worth corresponding rates for over all Auto mobile rates reported else where.

The maximum rate by regression is reported for Net worth namely 22.63 for Passenger cars that is this table.

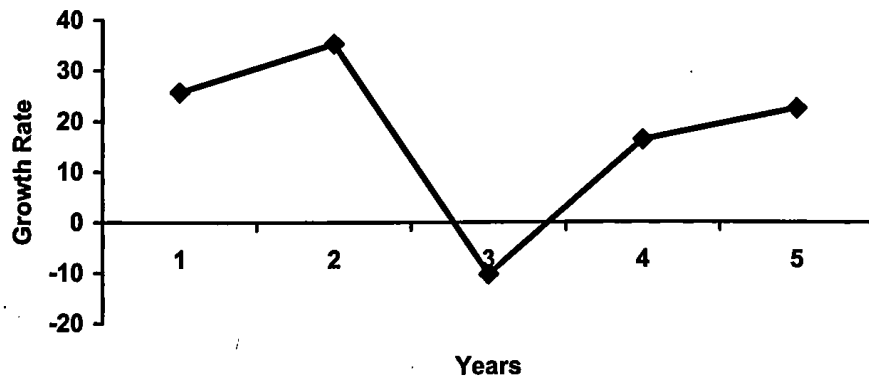
NET SALES



NET WORTH



NET FIXED ASSETS



INVESTMENTS

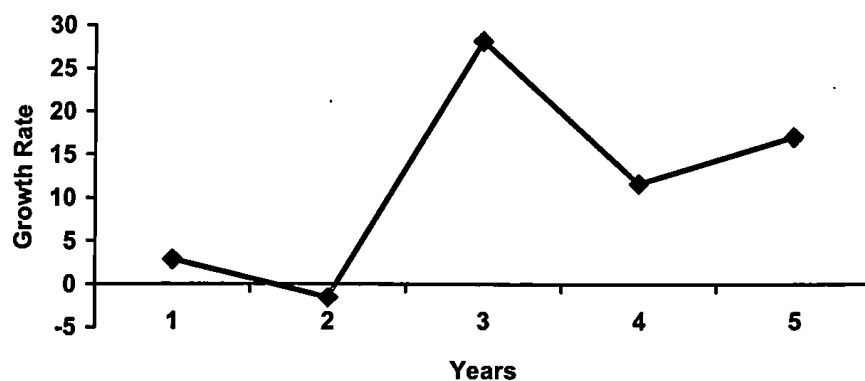


Fig. 7.10 : Growth of Passenger Cars in Terms of Financial Aggregates

Table 7.10 : Growth of Two & Three wheelers in terms of Financial Aggregates

in Rs. Crores

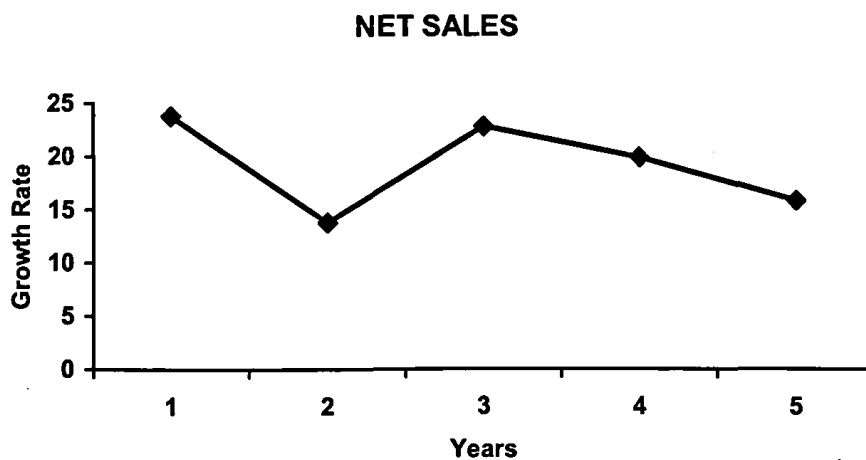
Year	Yr	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1990-91	-	2004.8	-10.4	158.7	615.9	194
1991-92	1	2074.5	-24.1	129.6	600.1	162.02
1992-93	2	2274	-13.5	161.1	571.6	136.9
1993-94	3	2854	145.5	278.7	543.6	349
1994-95	4	3816	324.6	914.4	643.6	578.5
1995-96	5	54114.6	447.3	1251.1	931.9	792.5
1996-97	6	6034.9	607.2	2357.2	1262.3	1162.9
1997-98	7	7125	613	2934.2	1614.6	1345.7
1998-99	8	8220.8	720.3	3704.4	2214.3	1762.8
1999-00	9	9440.2	740.2	4499.8	2812	2350
2000-01	10	10448.5	576	44215.9	3205	1695
2001-02	11	11527.6	786.7	4342.4	2896	2931
2002-03	12	13612.8	1076.5	5125.7	2937	4240
2003-04	13	15756.4	1294.2	6073.4	3375	5799
2004-05	14	19577.7	1050.5	7249.4	3823	6980
2005-06	15	26255	1718	8461	4114	8487
Total		195136.8	10052	91857	32159.9	38966.33

Source : Financial Aggregates and Ratios (CMIE) Various Issues.

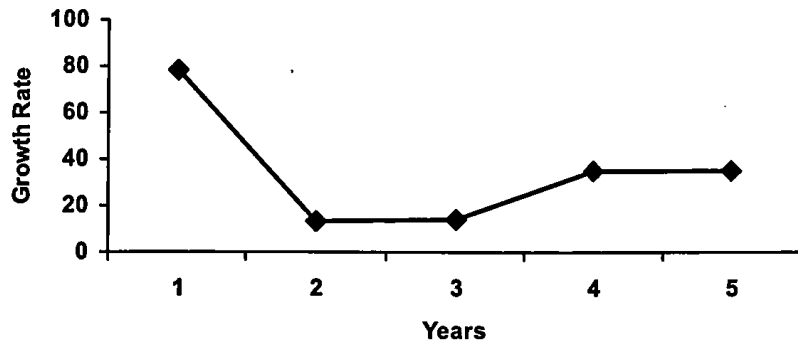
Compound Growth rates	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
y1-y6	23.8	0	78.63	16.03	48.31
y6-y11	13.81	0	12.99	18.6	20.3
y11-y15	22.84	0	14.27	7.27	23.69
y1-y15	19.87	0	34.78	14.74	32.37
By Regression	15.79	0	35.19	17.81	32.38
significance					
F	**	0	**	**	**
t	**	0	**	**	**

Rates are presented for two and three wheelers in terms of Financial Aggregates based on 15 years data available presented in table above. Barring rates for profit after tax we see that for these vehicles the rates are, from regression model, 15.79, 35.19, 17.81 and 32.38 for Net sales, Net worth, Net fixed assets and Investments respectively. The maximum rate is 35.19 per cent for Net worth for this sector of Industry.

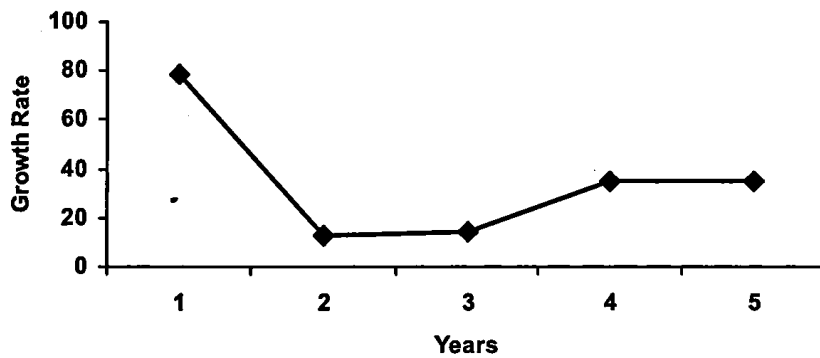
All four compounds for 15 year period fairly compare to growth rates obtained by two point compound rates.



NET WORTH



NET WORTH



INVESTMENTS

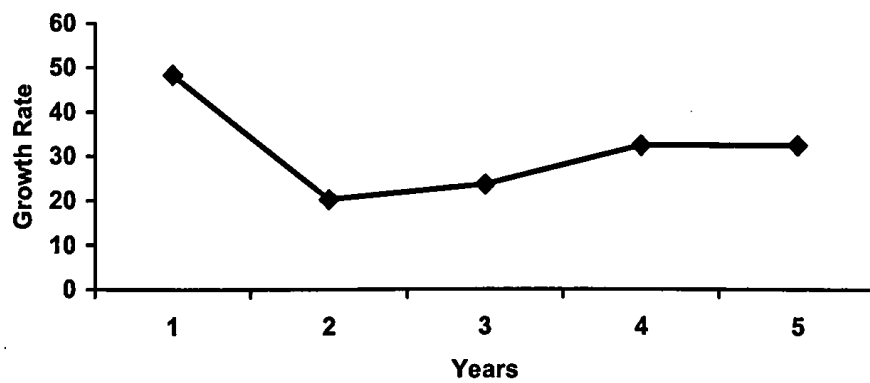


Fig. 7.11 : Growth of Two & Three wheelers in terms of Financial Aggregates

When the size of firm in terms of investment increases, growth also takes place. It is quite evident from the above graphical presentations that the growth of automobile industry is determined by several factors such as net sales, profit, technology, net assets and investment. During the period of recession, the growth automobile firms engaged in the production of commercial vehicles and a passenger cars is badly hampered.

The results of this chapter also confirm the hypothesis of the Marri's model that profitability determines a firm's ability and willingness to grow. Higher the level of profits, the better would be a firm's ability to raise funds for investment.

A part from technology, firm's size and profit, and capital intensity also emerged as significant factor in determining the growth of India automobile firms. Efficient utilization of capital stock, with a corresponding reduction in the marginal cost, enabled a firm to grow at a faster rate. Liberalization in economic policy and emergence of a competitive environment appear to be the most important reason for the firms to utilize their capital stock more efficiently. The result also confirms that new firms grow at a faster rate than their old counterparts.

There may be several factors such as the ability of entrepreneur, changes in product demand, economic conditions and other factors which also influence the size and growth of automobile firms.

Firm size appears to be positively influencing growth in a liberal eco policy. The results also confirm a positive relationship between profits and growth. This could be because, higher the level of profits, firms may find themselves in a better position to raise funds needed for investment and diversification from external sources.

Chapter - VIII

Summary and Conclusions

Chapter – VIII

SUMMARY AND CONCLUSIONS

The analysis of the size and growth of the Indian automobile industry has been mentioned in Chapter IV, V and VII. The firms such as Hero Honda, Bajaj Auto Limited, Maruti Udyog Limited, Hyundai, Tata, M&M and Ashok Leyland have witnessed considerable growth in terms of market share, profit, net assets, net sales etc. Hero Honda is a leader firm segment of motorcycle and it is proved that Hero Honda is occupying an important position on various counts such as financial position, quality, and costs etc while Bajaj Auto Limited is holding second position. However, Bajaj is the leader in the segment of scooter. Similarly in the segment of Passenger car, MUL is the market leader while M & M is the market leader in the segment of MUVs. Tata / Telco are the market leader firms in the segment of commercial vehicle. The study shows that the firm which offers more choice to customers in terms of colour, warranty period, different models, and loan at low rate of interest succeeds in achieving higher growth and such firms maintain leadership in the concerned segment. The firm level analysis in Chapter VII shows the various strategies used by the firm to get leadership in market.

With the above background, the hypotheses intended to be tested are discussed with positive or negative results.

8.1 HYPOTHESES TESTED

i) Automobile Firms achieved growth due to economic liberalization:

The liberalization of economic policy has proved to be a positive factor for the growth of automobile industry in India. The total volume of output produced in 1991 was about 3.66 lakh vehicles in 1990-91 which has increased to about 9.73 lakh vehicles indicating a growth of 165.84 percent. For instance, the number of firms engaged in

the production of Cars has increased from 04 in 1990-91 to 14 in 2005-06. The customers have got the advantages of choice of vehicles.

ii) The leader firm-achieved growth by proper capacity utilization and efficient use of resources.

The above hypothesis is proved positive. The capacity utilization planning done by the firm has come from mainly its own sources. The firm which makes use of its resources efficiently grows more faster than others .The firm has used its working capital

iii) Quality of the product was incidental for sustained growth.

The vehicles of the firm were claiming very high premium in the market. There was a very long waiting period of almost 10 years during 1971 to 80. The M80 motor cycle had booking of almost 30 years considering the capacity of the firm. However, the real demand was of 5 to 20 years production. After 1982, the period of waiting gradually reduced to 5 years because of increase in capacity and entry of competitors in the market.

Due to high quality, the market share continuously kept on increasing even in growing markets. The vehicles were preferred by customers due to their low maintenance costs. Maintaining high quality of the product is one of the major strategies of the firm under study. Thus the hypothesis is proved positive.

iv) Low cost and price of the product helped achieving faster growth.

Yet another major strategy of the firm was its low cost of production and lower price to customer as compared to similar vehicles of the competitors. The low cost per unit of product was possible due to large volume and increased productivity of manufacturing facilities. This brought down the fixed costs per unit of output. The fixed costs

were also controlled by the firm. On account of variable costs of the vehicles, the firm undertook various measures to cut costs and control them for continuous future benefits.

While pricing its product, the firm has ensured a lower price than the competitor. The strategy of low cost and price of the product helped the firm grow faster.

v) Capacity utilization has led to lowering the production costs.

This hypothesis is partially proved positive. The capacity utilization of the firm in 1994 was 78 % and during 1994-95 it was 89%. During the past, the firm never achieved 100% capacity utilization. However, during past years, the capacity utilization of the firm was higher than that of the competitors. This competitive advantage kept the firm in leading position. Considering the various factors affecting demand, the firm had planned its production to the extent the market can absorb. No finished goods stocks are piled up at anytime in history except during the recent recession in automobile industry. The efforts of the firm not to keep capacity idle and to add excess capacity has helped in reducing its idle capacity costs on the product.

vi) Updating of existing products and / or introduction of new products helped new helped in keeping leadership.

The above hypothesis is also proved positive. The firm was successful in developing some products in in-house R & D. but the major strategy of the firm was to modify and improve the imported technology to suit Indian markets. The analysis of technology proved that the firm had made lot of efforts to sophisticate the product after it got all the rights from collaborations. The various variations of the same model gave advantage of lower modification costs. The other

firms in two-wheeler have also adopted the similar strategy. However, the development of the products done by the firm appears to be superior to its competitors. Flooding market with new models may prove dangerous since the customer may reject certain products totally. If this happens, then the development costs and large number of components go waste resulting in a heavy loss. The strategy of bringing new models after few years has proved to be rewarding strategy.

vii) Cheaper spares and efficient after sale service contributed to higher sales and thereby the growth.

The product differentiation strategy of cheaper spare parts available at every corner of India, major dealers abroad and wide dealer network has helped the firm getting market leadership. The growth of the firm depends on increase in product acceptance by the customer. The growth in production and sales of the firm analyzed in chapter VI shows that the firm has highest growth in terms of vehicles as well as sale value. The satisfied customer only creates further demand by propagating. Bajaj vehicles never advertised in Indian market for many years. Only recently, Bajaj auto has started advertising its vehicles. The customers have created the demand for the vehicle. This was possible by reaching out to the customer through the channel of dealers. The firm not only assured the customer a cheaper of spare parts but also the quality of spare parts so that the customer would not spend again on repairs of vehicle.

viii) Technical or financial collaboration helped to grow faster.

The hypothesis was not completely proved as acceptable. The firm under study did not have any financial collaboration. This, however, has helped the firm to manage its activities without any outside interference. Secondly, the technical collaboration was used only to get the know for future development in in-house R & D. This

helped the firm to have latest technology on the vehicle design and manufacturing. Hence, the hypothesis is not fully acceptable as a growth strategy.

ix) Size played a major role in the growth of the firm.

The study approved the hypothesis that there is direct relationship between size and growth of the firm and growth is also related to profit. Size of a firm is also related to net sales, net assets and investment.

x) Investment was a major factor in the growth of the firms.

The study indicates that investment made by the firm in research and Development and in setting up new plant has resulted in high growth.

8.2 CONCLUSIONS AND RECOMMENDATIONS

From the study of leader firms, the following conclusions are drawn and recommendations made to achieve sustainable growth of the automobile industry through proper formulation and implementation of financial strategies:

1. The low cost of production and low price strategy have given the firm a definite competitive advantage in achieving growth. Majority of firms analyzed have been facing problems of high costs and low margin. There could be scope to reduce costs with tight control on resources. The firm Bajaj Auto Limited has 75% costs compared to its sales. This is the lowest of all the firms analyzed. The profitability of the firm is very good due to control on costs. The fixed costs have tendency of increase if not kept tab on them. The production activities and their relevant costs should be studied by every firm and those activities consuming high costs should be brought under strict cost control through concerted efforts. Fixed costs go to increasing if more and more capacity is installed in spite

of low demand. Many firms faced the problem of idle capacity resulting in a very high burden of fixed costs.

2. High quality product coupled with low cost strategy has given the firm competitive advantage in differentiating its product from that of the competitors. This has resulted in growth in market share and profitability volumes. The high quality calls for extra investment in testing equipments and manpower.

Due to the adoption of the modern methods of manufacture, the worker is made responsible for quality. The next shop or next operator in the sequence of production is treated as a customer. The complaints from the next operator or shop are internal feedbacks to the worker for improvement of the quality. By this method, the actual customer gets high quality goods. The high quality results into the lowering of the costs. When the quality is poor, a large number of parts is scrapped. This results in shortage of parts on the line and consequential loss of production. In addition to these losses, the market reaction further aggravates the problem of low demand. A vicious cycle is developed by low quality making production cost high and thereby resulting into high price and low demand. For any firm, it is essential to give highest importance to the quality to avoid wastages of material and other resources which are much more valuable than the cost. The growth in market share comes from the high quality product] as seen from the analysis of the firm in Chapter V.

3. More import of technology is not sufficient for getting sustainable competitive advantage. The continuous improvement and sophistication of the imported technology make the product more acceptable in the market. Based on the analysis of technology used and branding of products, it is proved that the technology does not

pay itself. It has to be sophisticated which has been done by Bajaj Auto Limited. Other firms are slowly adopting this strategy too.

The local manufactures have probably thought that the local expertise is not sufficient to improve the product. This may not be true. The product can be improved to suit local conditions, rules and regulations. Any firm should try to improve fuel efficiency of its product, more comfort to the rider and less risk to owner in specific and public at large. The improvements are costing more to customer. However, if the improvements are, in the long run, saving operating costs to the customer, he or she would not hesitate to pay higher price for better product. Chapter IV has thrown light on the aspect of product and technology used. It is proved that the more import of know-how does not give long term benefits to the firm. Continuous improvement of the product is essential for the sustainable growth of the automobile industry.

4. Customer satisfaction and better value for money can be created by formulating appropriate strategies in after sales and service areas. The customer is of utmost importance to every business firm. In automobile it is more so in that the product requires high amount of investment, a longer development cycle and remains with the customer for a very long time. The customer is not ready to buy any product that comes in the market.

The customer waits for the reaction of others who own the product for a long time. The demand is thus automatically picked up after the product stabilizes in the market. Any firm which produces new products could not sustain easily for a long time due to this reason. The confidence of customer is always with the established firms. It takes long time for any firm to establish its corporate image in the market. The established firm has shown that the product that

it has brought in the market is preferred by the customer confidence. Behind this belief is the long standing reputation of the firm. The reputation is built on the pillar of after sales service and providing spares at cheaper rates and that too at accessible distance. The strategy of the firm in differentiating the product has paid a very high dividend to it. Sometimes, the customer feels that they are neglected after the product is sold out. The strategy of attending to customer complaints creates confidence among the customers and a good image of the firm in the market. The firm under study shows this as an example.

5. To remain competitive, a firm must control its input resources. The use of modern manufacturing and cost control techniques give an added advantage to a manufacturing firm. The capacity utilization gives benefit of low fixed cost per unit of output. Before taking capital investment decisions, a firm should study the market potential and then plan its expansion accordingly. The input resources used by automobile firms consist of material, labour, consumable and infrastructure related inputs.

There is always a scope for better methods of production which help saving costs. The resources of the firm are always very costly. Labour once hired, needs to be paid for whether the services are utilized or not. It is therefore, necessary for every firm to obtain optimum utilization of labour with high efficiency. The constant review of surplus labour may result in deploying them on alternate jobs or can be trained to take-up any type of work as standardised by the agreement. A worker can also be asked to operate more than one machine resulting in lower labour cost per unit of output.

The optimum use of material results in saving costs. The firm under study has practiced this in past many years. The other

productive resources such as machines, equipments, tools, consumables, spares etc.

6. The low capacity utilization of various firms has made their operations costly and hence resulted in their failure. The quality and price of the product is of prime importance for getting higher market share thereby higher capacity utilization. Many firms faced the vicious cycle of low demand due to low capacity utilization and higher costs. The Government had in the past prescribed the minimum installed capacity for various automobile firms. The purpose was to make the operations viable as regards to the production costs. However, in the hope of getting the product sold in premium market, the firms installed large amount of capacities. The excess capacity only created a burden on high fixed costs making the product costly. The firms with huge capacities incurred losses as seen from the analysis in chapter V.

Many firms have taken decision to diversify into the business of manufacturing of the components. This also was not a very profitable venture since the small scale and ancillary units were having low cost technology to cater to the needs of various automobile firms. The vehicle manufactures diversifying to component manufacture can not, obviously, compete with the established firms. The division was only to accommodate the labour and keep the firm moving. It is therefore, essential for any firm to build the capacities to the required level avoiding capacity imbalance and try to utilize it to the optimum possible extent.

7. The analysis shows that the sustainable growth is possible through efficient use of working capital. The automobile firms need high amount of working capital due to its long processing cycle. The dependence on supplier, problems of supply quality and high costs

due to high margins can be avoided by in-house manufacture. The firm under study has been manufacturing large number of components in-house.

8. The concept of barriers to entry as a means to growth has been discussed in Chapter VI. The established firms create entry barriers for the new entrants. At the same time new entrants make all possible efforts to adopt all strategies such as new model, less price, advertisement to enter the market. The size and growth of firms has been analysed in Chapter VII. The growth of automobile firms such as Tata Motors, MUL, BAL, Hyundai has been discussed in Chapter VII.

The fixed cost burden is created through capacity costs and administrative and marketing costs. If the product is reputable, the marketing costs are low. With the use of computers, it is possible to reduce the administrative costs and thereby bring down the break even sales. A firm can alternatively increase selling price to have lower break even point. The price increase is not always possible in competitive economy. The firm under study has proved that the break even sales can be brought down by controlling fixed costs instead of increasing prices. The high volume of the firm made it possible to reduce fixed cost relative to its operations.

9. The firms having financial collaboration with the foreign partner lose their freedom in formulation of strategies. There is also a possibility of slower development of the models since the firm has to depend entirely on the foreign collaborators for such modifications and developments. No foreign equity is taken up by Bajaj Auto Limited. Thus the strategies of the firm are formulated by its management with freedom. In fact, the firm has given know-how to others. After liberalized policy was declared by the

Government of India, the collaborators having equity participations in Indian automobile firms have taken over the management. Thus, the financial collaborations have not helped such firms to become the market leader. The Hero Honda Motors Limited is trying to remain the leader in motorcycle market. In the long run, the firm may take-up on foreign markets when local market is flooded with more motorcycle.

10. The major strategy of a firm with sustainable growth is its lower price. When costs are high, the price is normally high. In competition, the high priced product is not preferred by customers when cheaper product with better quality is available in the market. The low price strategy of the competing firm reduces the demand of high priced product and slowly the bottom line turns into loss. The majority of firms analyzed in chapter V, show that they have incurred the loss at some or the other point of time. The major reason was that the price of their products was high. The leader firm can afford to sell its main products at profit and other at loss. This strategy gives a competitive advantage and it is normally adopted by leader firms to attack the competitors. It is, therefore, necessary for any firm to have low price strategy but without making loss on its main products. The cost control and better quality of the product makes all this possible and gives value to customer.

Recommendations

New launches are needed for the car business to grow, simply because new models keep the car-buying public's interest alive.

Further, the government's approval of reduction in custom duty will help the companies to reduce their expenditures on raw materials. Above all,

soft interest rates and the government's trust on developing the domestic infrastructure could also act as a positive trigger for the auto segment.

The automobile firms must develop anti-theft devices. There are increasing number of motorcycle and car thefts and causes loss and inconvenience to the customers. The firm should provide to the customers a full proof device that prevents theft of their cars/ motorcycle.

If we look at the existing penetration levels of vehicles in India, only 50 people own two-wheelers per 1000 and if we take four-wheelers probably we are the lowest in the world: only 7 out of a 1000 people. If we compare this to developed countries, such as the US, Germany or the UK, where almost 500 out of 1000 people own cars, the penetration levels are quite low. Thus, it is obvious that there is a lot of growth for the automotive industry in India. For four-wheelers, as the penetration levels are low, obviously the domestic demand is going to vump up considering the increasing disposable income and better lifestyle.

Driven by the 250 million middle-class and overall developments and the growth in the Indian economy, India has the potential to play a major role in two things. First, our country can become a hub of small cars and the second is that it can play a significant role in auto component exports

India would do extremely well in both the domestic and global markets. But the country needs to focus on some important issues. The first issue is the high direct and indirect tax regime in India compared to other countries. If there is a cost disadvantage, it would be very difficult to compete internationally. Also, there should not be many multiple tax structure which makes the Indian OEMs and other component suppliers uncompetitive; this is an area where the government is working. Second thing is infrastructure improvement, since ports play major role for exports. Third is the acute shortage of skill set and trained people are mainly not available in the country.

Further, when the country is negotiating FTAs, we should be sure that Indian players are not exposed to undue risk in terms of cost disadvantages. Also, the government should focus on specific incentives for the automotive industry such as the IT sector. Now the government has unveiled an ambitious “Automotive Mission Plan-2016” to make India a global hub for automobiles and auto components. By coordinating with industry players, providing more incentives for auto components and more focus on the goals, the country can expect a faster growth than what it is targeting, India can even head towards our larger goal of rapid and more inclusive growth.

8.3 PROBLEMS OF THE AUTOMOBILE INDUSTRIES

The automobile industries are facing various problems. Some of them are as follows:

Low investment in building new roads and maintenance of existing roads is affecting the growth of automobile industry in India. Besides maintenance, network of the roads is inadequate. Even today 60% of Indian villages are not linked with all wheeler roads.

Petrol or diesel price keep on rising from time to time. For example petrol price increased from Rs. 3.26 per liter in 1974 to Rs. 9.15 per liter in 1988 which further rose to Rs.48 per liter in 2006. Similarly diesel price increased from Rs. 1.06 per liter in 1974 to Rs. 3.63 per liter in 1988 and further it increased to Rs.36 per liter in 2006. This will affect the growth of automobile industries.

Currently, 100% FDI is allowed in automotive sector and the decision to enter as a 100% subsidiary or as joint ventures are company decisions. The challenges are outlined clearly in the AMP. Some of them are – expanding domestic demand, availability (of fuels, capital, human resources), improved accessibility (urban infrastructure, rural roads and connectivity), developing low-cost products for the rural and mass market, reduction of the number of

accidents and improvement of driving, air quality improvement, reduction of emissions and increasing fuel-efficiency. We have low penetration levels and the vehicle is a means of providing mobility, employment enhancing efficiency and creating entrepreneurship and promoting economic development. A key area of focus is public transportation.

8.3.1 Areas of concern

One of the important reasons of environmental pollution is the automobile industry. Most of the old vehicles specially trucks, buses, three-wheeler and six seated are creating more pollution which, of course, affecting the health of people in different ways. The diesel vehicles are causing more pollution than petrol vehicles.

There has been rapid growth in the industry over the past five years. While the number of cars on Indian roads has increased manifold, there are certain areas of concern which need to be tackled at the earliest. There is lack of world-class infrastructure facilities to support that growth.

Several factors such as better road infrastructure (roads, highways, flyovers) more demarcated parking areas in the city centres, suburbs and shopping areas / mall clusters have to keep pace with the growth of the automobile industry. With the industry paying the highest taxes, some portion of the revenue should be ploughed back to bolster and upgrade the infrastructure.

Besides, there are 27 million income tax payers in this country. They can efforts to own and room a car. Yet there are only 7.5 million cars on Indian road to day. Globally, there is another way to identify the potential buyer for cars. A family becomes a potential car customer as soon as its annual income exceeds the price of a car. In the Indian contract, this should mean that any Indian family with an annual income of about Rs. 2 lakh (price of a Maruti car 800) is a potential car customer.

According to ICAER, there are 40 million households in India with annual income between Rs. 90,000 and Rs. 2 lakh only 4 per cent of them own a car. Nearly 25 million Indian have bought two wheelers in the last five years. They are potential first time car buyers in the next few years.

In several cases, the family has the resources to buy and run a car. But they are apprehensive about the cost of maintenance, availability of spare parts, and reliability of service and so on. Many of these potential customers, while being in a position to afford a car do not feel the need for it. It is not in their mindset that they should own a car. They do not aspire to it. But once they see their peers and neighbours opting for it, they are quickly converted. This has been the experience of dealers of Maruti Udyog Limited.

8.4 SCOPE FOR FURTHER RESEARCH

For sustainable growth, apart from the size and growth and economic liberalization that are being studied, there is a need to carry out a further research in the area of customer satisfaction and value to the consumer in view of the stringent provisions of latest consumer protection Act.

The consumer is given wide powers to accept or reject the product, to take legal action against the firm supplying inferior quality goods under the above stated Act. The Global scene is still different. Many firms in Western countries and Japan producing automobile not only give warranty but also give guarantee by exchange of defective vehicles. The customers in other countries are more alert for the value and the quality of vehicles. They talk of compensation for loss suffered by use of the vehicles. Therefore, the vehicle manufacturers are very much cautious before and after delivery of the vehicle to the customer. They continuously keep contact with the customer and find out whether the customer is having any problem.

Today when Indian vehicles manufactures are facing global competition, it is likely that they may face such financial liability from foreign consumer under various Acts of their countries. In India, the Consumer Protection Act may direct the manufacturer to compensate the consumer for any damages caused due to defective product. The sustainability in that case may be threatened. A research in this area will throw light on the liabilities and responsibilities of the vehicle manufacturers for protecting rights of customers and continuing sustainable growth in future.

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Appendices

M&HCVS

(Sales in Rs. Crore)

Year	Yr	Telco	AL	HM	Total
1991-92	1.00	2150.00	616.00	0.00	88316.00
1992-93	2.00	663.33	796.72	0.00	1460.05
1993-94	3.00	1865.00	978.03	0.00	2843.03
1994-95	4.00	2900.00	1253.81	7.21	4161.02
1995-96	5.00	4025.39	1629.94	18.00	5673.33
1996-97	6.00	4900.00	2100.01	22.00	7022.01
1997-98	7.00	3000.00	1600.00	20.00	4620.00
1998-99	8.00	2700.00	1703.30	15.00	4418.30
1999-00	9.00	3755.13	2292.42	6.00	6053.55
2000-01	10.00	3093.63	1995.82	7.00	5096.45
2001-02	11.00	3752.00	2025.43	0.05	5777.48
2002-03	12.00	5420.00	2525.63	0.00	7945.63
2003-04	13.00	7300.00	3393.80	0.00	10693.80
2004-05	14.00	9610.00	4151.00	0.00	13761.00
2005-06	15.00	9894.90	5191.55	0.00	15086.45
Total		65029.38	117803.46	95.26	182928.10

Passenger Cars
(Company - Wise Trends in Sales (in Rs. Crore))

Year	YR	MUL	DMI	HM	GMI	MBI	PAL	TELCOM	PAL_PEUG	HMI	Honda Car	Total
1991-92	1	1725.76	0	315	0	0	468.85	0	0	0	0	2509.61
1992-93	2	1974.41	0	447.32	0	0	321.12	100	0	0	0	2842.85
1993-94	3	2545.06	0	556.54	0	0	460.95	280	0	0	0	3842.55
1994-95	4	3813.07	0	600	0	0	460.95	562.21	8.87	0	0	5445.1
1995-96	5	5979.93	48.02	745	0	85	393.41	569.23	242.79	0	0	8063.38
1996-97	6	7265	875.07	676	595	370	292.58	270.73	240.02	0	0	10854.85
1997-98	7	7713.08	333.02	600	600	730	292.58	175	100	0	0	10814.13
1998-99	8	7300.93	341.03	675	300	0.17	104.24	132	10	0	0	9082.34
1999-00	9	8540.06	1028.21	1168	250	0.15	18.43	1589.73	0	0	0	12922.61
2000-01	10	8187.06	971.28	1103.89	0	0	2.61	1248.42	0	2892.01	685.72	15090.99
2001-02	11	8284	242.21	856.95	0	0	0.22	1923	0	3237.41	808.34	15352.13
2002-03	12	8441.02	242.21	845	0	0	0.99	2168	0	3794.57	935.29	16427.08
2003-04	13	10355.03	100	612.7	0	0	0	2820	0	5490.52	1516.33	20894.58
2004-05	14	1240.05	0	802.42	0	0	1.55	4000	0	6930.17	2525.76	15499.95
2005-06	15	13801.09	0	629.12	0	0	7.14	4509.98	0	7867.72	2928	29743.05
Total		97165.55	4181.05	10632.94	1745	1185.32	2825.62	20348.3	601.68	30212.4	9399.44	169985.8

Motor Cycles
(Company - Wise Trends in Sales (in Rs. Crore))

Year	YR	BAL	HH	TVS> Suzuki	ESCOR.A	EICHER	SOOR.A	IDEAL. J	ESCORTS	LML	KIEN Eng	Total
1991-92	1	230	253.28	63.36	0	0	0	0	246.8	0	0	793.44
1992-93	2	240	279.53	65.04	0	0	0	0	225.35	0	0	809.92
1993-94	3	290	337.47	118.97	0	44.53	0	6	280.47	0	0	1077.44
1994-95	4	540	432.84	201.93	0	71.16	5.75	6	425.19	0	0	1682.87
1995-96	5	650	572.19	304.84	8.76	86.86	8.76	15.25	0	0	0	1646.66
1996-97	6	800	69.07	407.92	8.29	99	8.29	2	0	0	0	1394.57
1997-98	7	1010	1052.85	53.06	9.97	85.26	9.97	2	0	0	0	2223.11
1998-99	8	1150	1413.45	691.91	12.55	116.87	12.55	0	0	0	0	3397.33
1999-00	9	1143.8	2147.65	807.46	12.55	121.06	12.55	0	0	0	0	4245.07
2000-01	10	1276.07	3024.53	9774.21	0	106	7.91	0	0	200.94	0	14389.66
2001-02	11	1893.04	4262	1188.69	0	122.39	6.93	0	0	187.15	119.55	7779.75
2002-03	12	2608.02	4862.09	1952.94	0	147.77	0	0	0	528.19	140.79	10239.8
2003-04	13	3185.02	6468.67	1940.05	0	147	0	0	0	528.19	150.13	12419.06
2004-05	14	4417	8234.03	1845.66	0	0	0	0	0	283.33	66.62	14846.64
2005-06	15	6108.04	9604.17	2053.27	0	0	0	0	0	283.33	66.62	18115.43
Total		25540.99	43013.82	21469.31	52.12	1147.9	72.71	31.25	1177.81	2011.13	543.71	92505.91

Scooters
(Company - Wise Trends in Sales (in Rs. Crore))

Year		BAL	LML	Kinetic HM	MAH.S	TVS.Suz	Guj Nar. A	Vespa,	Total
1991-92	1	650	121.07	479.53	12.68	0	7.45	10.05	1280.78
1992-93	2	576.59	121.07	164.62	149.98	0	7.45	10.05	1029.76
1993-94	3	658.47	238.19	148.4	165.49	0	0	1.09	1211.64
1994-95	4	100.76	321.12	168.8	173.9	0	0	0	764.58
1995-96	5	132.38	479.53	295.16	219.71	7.75	0	0	1134.53
1996-97	6	143.12	575.11	306.55	276.2	14.05	0	0	1315.03
1997-98	7	1202.23	693.83	327.77	262.14	16	0	0	2501.97
1998-99	8	1452	760.94	294.58	306.31	186.24	0	0	3000.07
1999-00	9	1382.01	666.95	357.49	309.13	228.27	0	0	2943.85
2000-01	10	998.05	376	391.04	205.74	270.58	0	0	2241.41
2001-02	11	1037.01	489.15	330.03	117.79	277.12	0	0	2251.1
2002-03	12	749.06	160	290.95	60.94	292.58	0	0	1553.53
2003-04	13	526.06	160	198.86	36.05	386.19	0	0	1307.16
2004-05	14	314.06	136.21	136.4	29.75	485.56	0	0	1101.98
2005-06	15	267	212.51	136.4	20.96	554.59	0	0	1191.46
Total		10188.8	5511.68	4026.58	2346.77	2718.93	14.9	21.19	24828.85

Light Commercial Vehicles
(Company - Wise Trends in Sales (In Rs. Crore))

Year	YR	Telco	Bajaj Tem	EM	S Mazda	M&M	AL	Daewoo M	SM	Force Motorce	Total
1991-92	1.00	62.36	224.10	130.00	75.32	0.00	0.00	84.67	0.06	0.00	639.87
1992-93	2.00	18.00	267.75	108.51	82.76	0.00	0.00	78.40	9.13	0.00	603.10
1993-94	3.00	1050.70	429.63	127.99	107.23	75.37	0.00	96.47	10.30	0.00	1897.69
1994-95	4.00	1600.00	484.03	194.37	137.98	120.00	40.00	121.93	0.00	0.00	2748.31
1995-96	5.00	2400.00	623.41	244.69	171.60	150.00	95.00	94.82	0.28	0.00	3844.80
1996-97	6.00	2674.93	197.00	299.94	173.77	145.00	55.00	43.63	0.00	0.00	3589.27
1997-98	7.00	1915.00	178.00	241.28	158.89	180.00	43.00	20.10	0.00	0.00	2736.27
1998-99	8.00	1750.00	200.00	244.99	143.16	134.25	25.00	3.36	0.00	0.00	2500.76
1999-00	9.00	1736.50	260.00	326.45	200.57	241.70	24.00	2.66	0.00	0.00	2791.88
2000-01	10.00	1859.00	0.00	415.10	255.29	226.20	15.05	0.57	255.29	228.60	3255.10
2001-02	11.00	1292.75	0.00	494.37	320.75	347.12	11.65	0.00	320.75	180.50	2967.89
2002-03	12.00	1355.00	0.00	655.26	401.11	963.03	9.00	0.00	401.11	271.60	4056.11
2003-04	13.00	2700.00	0.00	856.66	519.16	1356.06	26.00	0.00	519.16	19.47	5996.51
2004-05	14.00	3750.00	0.00	1354.15	646.14	1814.00	27.00	0.00	646.14	120.00	8357.43
2005-06	15.00	5558.42	0.00	1420.42	666.96	1853.53	59.32	0.00	666.96	146.06	10371.67
Total		29722.66	2863.92	7114.18	4060.69	7606.26	430.02	546.61	2829.18	966.23	55390.43

Growth of Automobile Industry in Terms of Financial Aggregates in Rs.Crore						
Year	Yr.	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1990-91		8297.5	219.3	1509.9	2021.3	621.3
1991-92	1	9262	75.3	1627	2294.7	730.7
1992-93	2	12718	-120.1	1896.9	3723.3	1063.7
1993-94	3	15698	298.4	2451.1	4186.2	802
1994-95	4	21279.7	990.2	4995.6	5059	700.6
1995-96	5	28272.3	1652.1	7131	6757.8	787.2
1996-97	6	33647.2	1936.1	10688.4	8064.3	1219.5
1997-98	7	32484.5	1932.2	11808.4	8991	1471.3
1998-99	8	31239	1178.1	12957.9	13780	1193.4
1999-00	9	51853	1244	17746	19163	5307
2000-01	10	52656	352	17025	20947	4415
2001-02	11	50398	27	13419	20087	6435
2002-03	12	56524	10101	14198	19269	6838
2003-04	13	75549	3715	20556	18969	12068
2004-05	14	97111	4790	24930	19801	13184
2005-06	15	108415	6782	30507	20870	15240
Total		685404.2	35172.6	193447.2	193983.6	72076.7

Growth of Commercial Vehicles in Terms of Financial Aggregates in Rs.Crore						
Year	Yr.	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1990-91		3549.9	192.5	835.5	742	117.2
1991-92	1	4055	141	925.4	934.1	447.9
1992-93	2	3917.8	-19.5	1109.5	1065.4	204.3
1993-94	3	5150.9	82	1256.6	1311.6	213.7
1994-95	4	7230	386.3	2407.9	1863.4	418.3
1995-96	5	9733.5	674.3	3375.6	2399.2	742.4
1996-97	6	11968.6	891.2	455	3026.6	887.6
1997-98	7	9010.9	312.6	4520.4	3461.5	888.2
1998-99	8	8198.7	-96.3	4310.3	3725.2	1094.5
1999-00	9	10615.2	-110.9	4278.2	4655.5	1331.9
2000-01	10	10119.8	-401.5	3713.5	4578.9	1533.1
2001-02	11	10935.9	-41.4	3666.2	4483.5	1317.6
2002-03	12	13387.1	497.3	3767.9	4306	1483.5
2003-04	13	19243.8	1144.7	4980.7	4303.7	3329.8
2004-05	14	24857.5	1494.8	5702.3	4544.9	3252.5
2005-06	15	33304	1802	7685	6379	2655
Total		185278.6	6949.1	52990	51780.5	19917.5

Growth of Passenger Cars in Terms of Financial Aggregates in Rs.Crore						
Year	Yr.	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1990-91		2742.8	37.2	515.7	663.4	785
1991-92	1	3132.4	-41.5	571.6	760.6	813.1
1992-93	2	3503.8	-9.7	627.6	997	76.7
1993-94	3	4557.3	152.4	1084.6	1257	325.9
1994-95	4	5944.8	310.7	1569.4	1424.3	1163.9
1995-96	5	9108.3	609.2	2503.1	2177.1	1507.3
1996-97	6	10980	526.7	3488.5	2393.7	1186.8
1997-98	7	11029.5	1045	4468.4	2371.1	1768.8
1998-99	8	11357.6	569	5717.7	7881.1	1438.2
1999-00	9	15322.5	354.6	6831.5	927505	1484.5
2000-01	10	16570.7	-576.7	7194.6	10460.9	1068.6
2001-02	11	16549.1	-434.2	6192.5	10892.1	1097.4
2002-03	12	17676.3	-300.8	6207.5	10576	1008.6
2003-04	13	22485.5	953.4	7518.8	6471.1	2869.7
2004-05	14	29325.4	1390.6	9438.1	7404.1	2894.7
2005-06	15	40090	2531	11745	6346	3804
Total		220376	7116.9	75674.6	999580.5	23293.2

Appendix - IX

Growth of Two & Three-wheelers in Terms of Financial Aggregates in Rs.Crore						
Year	Yr.	Net Sales	Profit After Tax	Net Worth	Net Fixed Assets	Investments
1990-91		2004.8	-10.4	158.7	615.9	194
1991-92	1	2074.5	-24.1	129.6	600.1	162.02
1992-93	2	2274	-13.5	161.1	571.6	136.9
1993-94	3	2854	145.5	278.7	543.6	349
1994-95	4	3816	324.6	914.4	643.6	578.5
1995-96	5	54114.6	447.3	1251.1	931.9	792.5
1996-97	6	6034.9	607.2	2357.2	1262.3	1162.9
1997-98	7	7125	613	2934.2	1614.6	1345.7
1998-99	8	8220.8	720.3	3704.4	2214.3	1762.8
1999-00	9	9440.2	740.2	4499.8	2812	2350
2000-01	10	10448.5	576	44215.9	3205	1695
2001-02	11	11527.6	786.7	4342.4	2896	2931
2002-03	12	13612.8	1076.5	5125.7	2937	4240
2003-04	13	15756.4	1294.2	6073.4	3375	5799
2004-05	14	19577.7	1050.5	7249.4	3823	6980
2005-06	15	26255	1718	8461	4114	8487
Total		195136.8	10052	91857	32159.9	38966.33

Source: Industry: Financial Aggregates & Ratios for Monitoring Indian Economy, June 2000, Jan 2006 & March 2007

The automobile associations deal with several crucial auto related issues. These act as solution providers to many companies under one roof. Since the entire automobile industry is widespread, it has numerous issues to be dealt with. Some associations focus on dealing with the manufacturers of auto parts while others aim at resolving areas like car or truck dealing. Following is the list of several such automobile associations.

Society of Indian Automobile Manufacturers (SIAM)

The Society of Indian Automobile Manufacturers (SIAM) is the apex national association representing the Auto Industry...

The Automotive Component Manufacturers Association of India (ACMA)

The Automotive Component Manufacturers Association of India (ACMA), with a membership of over 365 companies, has been the Indian auto component industry's spokesman for the last 38 years.

The Western India Automobile Association (WIAA)

The Western India Automobile Association (WIAA) was founded on October 15th 1919 and today is the largest and the oldest motoring body with over forty-eight thousand members and a network of 7 branches in 4 states of Western India.

Federation of Automobile Dealers Associations (FADA)

This is the first Indian Association formed by the dealer community in January 1964 and signified the urge of India's automobile dealer community to have their own identity and a national organization of their own.

Association of International Automobile Manufacturers, Inc (AIAM)

Members of the Association of International Automobile Manufacturers, Inc. (AIAM) distribute world-class passenger cars, multipurpose passenger vehicles, and light trucks in the United States.

Auto Brite India

Auto Brite India, established in 1988 is known for its quality in manufacturing as well as marketing products like Alternator Slip Rings, Solenoid Switches and Commutators over the years.

Automotive Research Association of India (ARAI)

It is amongst the most reliable company that promises to deliver the quality assured vehicle in terms of R&D, testing, certification, homologation and framing of vehicle regulations.

Automotive Association of Southern India (AASI)

This organization provides the private car owners with the assurance of the maintenance of their cars. It offers them to be its member and thus avail the lifetime services like regional transport authority vehicle, touring, road safety, insurance.

Automobile Association of Upper India

Established on 20 September, 1950, this association had the opportunity of being honored by Late Rajindra Prasad, the first President of India. It has a remarkable history in providing services to the public and the Transport Department, Police and Customs.

Motor and Equipments Manufacturers Association(MEMA)

MEMA has been successfully representing and serving various motor components manufacturing companies, systems for the original equipment (OE) and providing several other services since 1904.

Federation of All India Automobile Spare Parts Dealers' Associations (FAIASPDA)

It was founded in 1950 with the membership of associations from Bombay, Calcutta, Delhi and Madras. The association plays the role of medium between spare parts dealers and various Government bodies.

National Automobile Dealers Association

Established in 1917, NADA represents over more than 20,000 car and truck dealers. It has extended its reach not only domestically but even internationally with more than 43,000 franchises.

All India Car Dealers Association

Founded in 2006, the association aims at finding solutions for sale and purchase of cars by providing the sellers and buyers a common platform. It is a multi purpose association dealing with various other issues like problem of dealers or any other vehicle related problem.

Automotive Tyre Manufacturers' Association (ATMA)

Set up in 1975, ATMA represents the automotive tyre industry in India. It has eight largest companies that is responsible for 90% of the total production of tyres in India as its members.

Automobile Association of Eastern India

The association is remarkably known for extending its assistance in all issues related to motor vehicle department. It delivers various other services like insurance, touring etc under one roof.

Auto Associations

Different associations serve different purpose. Automobile association looks after the different phase of automobile industry. Some checks the wellness of automobile associates in different regions where as other keeps the auto component industry healthy. Following are the contact details of few automobile associations in India.

Automobile Association of Upper India (AAUI)

C-8 Institutional Area

South of IIT, New Delhi – 110016

Tel.: +(91)-(11)-26965397, 26852052, 26611034, 26852032

Fax: +(91)-(11)-26866302

E-mail: aauiindia@del3.vsnl.net.in, aaprsect@vsnl.com

Website: www.aaui.org

Automotive Research Association of India (ARAI)

Affiliated to Min. of Heavy Industries & Public Enterprise, Govt. of India

Regd. Office

S. No. 102, Vetal Hill, Off Paud Rd., Kothrud

Pune- 411038, (Maharashtra), India

Postal Address

P.O. Box No. 832

Pune-411004, India

Tel.: +(91)-(20)-25431284

Fax: +(91)-(20)-25434190

E-mail: director@araiindia.com

Website: www.araiindia.com

Automobile Association of Southern India (AASI)

AASI Centre, 187, Anna Salai

Post Box No. 729, Chennai 600 006

Tel.: +(91)-(44)-28521162, 28524061

Fax: +(91)-(44)-28511548

E-mail: aasi40@hotmail.com , aasi40@yahoo.com

Website: www.aasindia.in

Society of Indian Automobile Manufacturers (SIAM)

Core 4-B, 5th Floor, India Habitat Centre

Lodhi Road, New Delhi - 110 003

Tel.: +(91)-(11)-24647810 -12

Fax: +(91)-(11)-24648222

E-mail: siam@siam.in

Website: www.siamindia.com

Western India Automobile Association

Lalji Naranji Memorial Bldg.

76, Veer Nariman Road, Churchgate

Mumbai - 400 020

Tel.: +(91)-(22)-22041085, 22880407, 22047032, 22041271

Fax: +(91)-(22)-22041382

E-mail: wiaa@hathway.com, wiaa@vsnl.net

Website: www.wiaaindia.com

Automotive Component Manufacturers Association of India (ACMA)

6th Floor The Capital Court

Olof Palme Marg, Munirka

New Delhi 110 067

Tel.: +(91)-(11)-2660315, 26175873, 26184479

Fax: +(91)-(11)-26160317

E-mail: acma@vsnl.com, acma@vsnl.net

Website: www.acmainfo.com