



## Innovative Technology of Automobile Industry in India (with Special Reference to Passengers Car Segment)

### KEYWORDS

1. Evolution of car industry. 2. New technology of auto segment. 3. GDP and Revenue generation. 4. Domestic market share 5. Production trends last few years.

### P. Sankaran

Assistant Professor, Department of Commerce, Arignar Anna Government Arts & Science College, (Pondicherry University), Karaikal PIN 609602.

### Dr C. Gounasegaran

Associate professor and Head Postgraduate Department of commerce Kanchi Mamuniver Centre Postgraduate Studies Laws pet –Pondicherry. Karaikal PIN 609602.

**ABSTRACT** *The motor vehicle industry has attracted the attention of economists the world over. But the Indian motor vehicle industry was impartial growth starting from mid-twentieth century to 21<sup>st</sup> century, the industry to produce all type of vehicles and assembling. The structure of the assembling segment of the industry at one level covered by the regulatory policy at more fundamental level, the crucial factor is technology, diversification and collaboration has governed and promote strength the segment of the firm. The focus of the study enhances the passenger cars segment and how to develop with sophisticated technologies is used in production of cars, sales of vehicles and revenue generation. The industry contributes to major portion of GDP in national developments and creates million of employment opportunities for direct as well as indirect nature.*

### INTRODUCTION

India rapid growth in the last couple of decades has been primary driven by services sectors like technology and business process outsourcing. The contribution of gross domestic product, the service sectors in top more than half of the percentage GDP, industry sectors second place it contribute twenty seven percentage and rest of them agriculture allied sectors. In 1992 the Finance Ministry began the process of liberalizing Indian economy by reducing taxes and tariffs, eliminating the license-quote regime and encouraging FDI. After the reforms there has been a significant increase in growth with GDP, per capita growing at a 4.8% CAGR in 1992 and 2004 and subsequent year considerable increased. The increased in domestic sales result in liberalization of financial sectors reform and reducing the rate of interest in approved financial institutional borrowing. The emerge as the destination of choice in the world for design and manufacture of automobiles and auto components with output reaching a level of US\$ 145 billion accounting for more than 10% of the GDP and providing additional employment to 25 millions of people by 2016. In recent years technology and innovation have been cited as important drivers of the competitive positioning of a company. The enlarge business opportunities in both developed and growing markets. The lengthened number of suppliers of products and services will also get change to the way these goods and services are consumed and received. The market place pressure to deliver these products and increase their utility from the consumer's perspective will drive continuing innovation in both developed and rising market. While emerging markets will fight to provide value for the end user while sustaining profitability, developed markets will increasingly try to guard their existing market share by flanking itself with cooperating allies and looking to expand service of innovation. Today rules of competition have changed in favorable the industry. The one reason for this knowledge about new technologies spreads quickly to different parts of the country. Another reason is that ability and tools to apply knowledge is at the disposal of individual income and organizations expenditures. The Government of India takes necessary steps not only to maintain the high rate of growth but also retain the attractive of Indian market for further attractive the competitive strength of Indian companies. The Government was setup through the development council on automobile and allied industries, constituted a task force to draw up a decade mission plan for Indian au-

tomotive industry, the challenge was to give a shape of innovative plan of action with full participation of stakeholders and to complexity it into a mission mode to remove barrier coming in the way of growth industry. Automobile industry to meet the customer demands and changing business needs, they raise a strategy to accomplish the demands of consumers as well as face the competitor's challenge with the aid of new technology and innovative ideas. The industry service to the society next advance stage introduction of new electric cars in the place of LPG, petrol and diesel cars due to continuous hiking of fuel prices as well as increasing carbon-dioxide pollution in the earth.

### EVOLUTION OF CARS INDUSTRIES:

Ashok Leyland was the first to produced business in India with the entry of TELCO in mid-sixties the market shared on the basis of 40:60 ratios with the after some year fluctuations its market shares. The History of the automobile after many experimental models dating back at least a hundred years, cars was built and was running by late 1885 with a water-cooled, single-cylinder engine that developed about 0.8 hp at 400 rpm- fast for an engine of the day. A simple handle arrangement steered two front wheels and his subsequent models were four-wheeled. Daimler concentrated on four stroke engine after setting up his own company. The first production of car was in 1886 Benz Tricycle. This began a period that was later known as the Brass era which is considered to be from 1890 to 1918 in the U.S. From its inception into the 1920s, the Ford Model T fulfilled both of these roles simultaneously in the U.S. and in many markets around the world. In Europe and Japan in the 1920s and 1930s, this was achieved by the much smaller Austin 7 and its competitors and derivatives, although it failed to be accepted on the U.S. market even in the middle of the depression. From the 1940s and into the 1960s, the Volkswagen beetle played both roles throughout much of the world in Germany and Latin America particularly—but it was let down by relatively high fuel consumption, such that British, French, Italian, and Japanese models, all with better fuel economy, could capture the maximum-economy position in their home countries. Meanwhile, in the U.S., the Beetle and other imports could command the maximum-economy position, but the mainstream-economy position was commanded by cars that would seem more like mid-range or luxury models in some other markets. By the 1960s a new wave of front-wheel-drive

cars with all independent suspension had been launched. Large domestic companies, including Ashok Leyland, Tata, TVS, began to produce commercial vehicles in Maharashtra, Chennai, and Kolkata. By the 1970s the hatchback had become the standard body type for new economy car models. Many of these cars were seen as the best value proposition, because they were generally larger cars, for the same price as small western models was sold. Automotive industry has become extensively globalized, with all major manufacturers being multinational corporations using globally sourced raw materials and components, with a trend for moving assembly to the lowest labor cost countries.

Today every major manufacturer offers economy cars, including at least one truly small car that may fall into sub classifications such as subcompact car, super mini cars segment; city car, micro car, and nano car other. The features of new sophisticated cars on Indian road even remote villages for example, power steering, power brakes, air conditioning, electric windows would in later decades be viewed as appropriate as standard equipment even in economy models. In 2010 Gujarat emerged as an automotive hub with investments from Tata Motors in Nano car project. The recently launched several innovative global product in India like duraplus and Assurance fuel max, it is already recognized with 2012 product of the year Award in the tires innovative category in India, these product possess of lending market- innovation the need of compact and mid-size passenger cars owners like long mileage, wet drip and fuel efficiency etc. Auto manufacturers are always trying to make their luxury cars the most luxurious of all. Each new model year brings new entries to the market, and there are usually a few new noteworthy advances in features or technology. Every new model release brings yet another element to the competition, and although the entire class is packed full of top notch automotive options, the stakes are highest amongst the top 10 luxury cars with high sophisticated technology cars in Indian road.

**CLASSIFICATION OF VEHICLES:**

Classification of motor vehicles is mainly divided into light motor vehicle and heavy motor vehicles and utility based transportation, non transportation vehicles they are followings

- **Heavy Commercial Vehicles:** Heavy commercial vehicles, or HCVs, are generally classified as those vehicles that have a Gross Vehicle Weight (GVW), of above 16.2 metric tonnes.
- **Medium Commercial Vehicles:** Medium commercial vehicles, or MCVs, are generally classified as those vehicles that have a GVW between 7.5 and 16.2 metric tonnes.
- **Light Commercial Vehicles:** Light commercial vehicles, or LCVs, are generally classified as those vehicles that have a GVW of up to 7.5 metric tonnes.
- **Passenger Cars:** Passenger Cars are vehicles that have a seating capacity of up to six persons, excluding the driver. In line with agreed categories of sub-classification, passenger cars are further classified into the following segment:

- **Mini Cars** have a length of up to 3,400 mm. This entry-level segment constituted 5.8% of the domestic passenger car market in 2007-08 by volume.
- **Compact Cars** have a length of between 3,401 mm and 4,000 mm. This segment constituted 71.4% of the domestic passenger car market in 2007-08 by volume.
- **Midsized Cars** have a length of between 4,001 mm and 4,500 mm. This segment constituted 18.5% of the domestic passenger car market in 2007-08 by volume.
- **Executive Cars** have a length of between 4,501 mm and 4,700 mm. This segment constituted 3.5% of the domestic passenger car market in 2007-08.

- **Premium Cars and Luxury Cars** have a length of between 4,701 mm and 5,000 mm, and 5,001 mm and above, respectively. These segments constituted 0.8% of the domestic passenger car market in 2007-08.

**Utility Vehicles:**

Utility Vehicles, or UVs, have a seating capacity of seven persons to 12 persons excluding the driver.

**Multi-purpose Vehicles:**

Multi-purpose vehicles, or MPVs, are van-type vehicles that have a seating capacity of seven persons to 12 persons excluding the driver.

**RECENT SALES TRENDS**

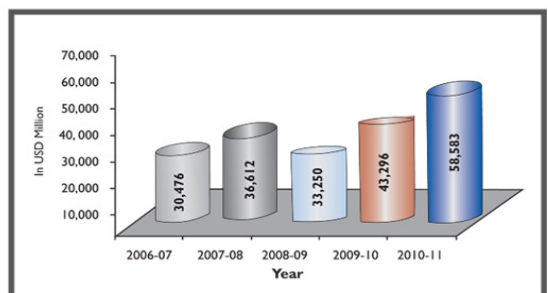
The Indian Automotive Industry after de-licensing in July, 1991 has grown at a spectacular rate on an average of 17% for after few years. The industry has now attained a turnover of Rs. 1,65,000 cores (27.5 billion USD, assuming 1\$ = Rs.60) and an investment of Rs. 50,000 cores, was producing direct and indirect employment to 1.31 cores people in 2006. At present nearly about one and half cores of employment. It also makes contribution of nearly 20 percent to the collective money of indirect taxes. The export in automotive sector has grown on average CAGR of 30 % per year. Auto Expo Motor Show attracts over 1 million visitors and is recognized as one of the major motor shows in the world. This year's exhibition takes place in New Delhi from 7<sup>th</sup> to 11<sup>th</sup> February in this year had participated from over 30 countries, including China, Germany, South Africa, USA and the United Kingdom. The industry produced a total 1,854,157 vehicles including passenger vehicles, commercial vehicles, three wheelers and two wheelers in March 2014 as against 1,686,348 in March 2013, registering a growth of 9.95 percent over the same month last year. The growth continues to be on account of growth in two wheelers production. The comparative auto sales for the month of may 2013 and 2014. (Table-1)

**AUTOMOBILE SALES MAY 2013, 2014.**

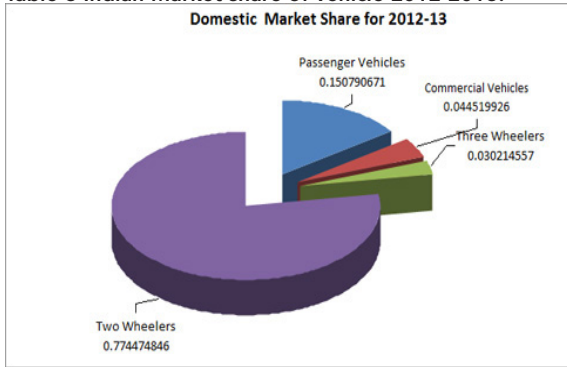
**Table-2 Gross sales in US\$ from 2006-07 to 2010-11**

	MAY -2013	MAY-2014	
Total sales	14,99,893	1698138	13.22
Passenger cars	1,44,132	148577	3.08
UVS	42,335	44267	4.56
Two wheelers	12,06,173	1402830	16.30
Three wheelers	35,904	40369	12.44
LCVs	36,939	30414	17.66
M&HCVs	18,519	16572	10.51

**GROSS TURNOVER OF THE AUTOMOBILE INDUSTRY IN INDIA 2006-07 TO 2010-11**



**Table-3 Indian Market share of vehicle 2012-2013.**



The table-1 show the attitude seems to be improving for the struggling automobile sector with car sales growing by 3% in may to 1.49 lakhs units from 1.44 lakhs units in the year ago period .The industry body of Society of Indian Automobile Manufacturers attributed the growth to decline in negative sentiments on account of formation of new government at the Center and also cut in the excise duty on vehicles. It,

however added that commercial vehicle sales which are still in the negative territory, would take more time to recover."Over the last 3 months, there has been a gradual improvement in sentiment. Due to the formation of a stable government at the Centre, coupled with reduction in the cost of cars due to cut in the excise duty, consumers sentiments are looking up," Besides, the industry body, in its recommendations to the government for budgets seeks to speedy implementations of Goods and Services Tax According to SIAM, the passenger vehicles category which includes utility vehicles and vans saw sales grow by 2.76 % at 2.08 lakhs units. However even as people are buying more cars accordingly to numbers released by the industry body commercial vehicle sales continued to fall, declining by about 15% to 46,986 units from 55,458 units in the same period of the previous year commercial vehicle sales are still in the negative.

There is some improvement in the sense that decline earlier was 25% now it is 15%.two wheeler sales during the month grew by 16.3 % to 14.03 lakhs units fom12.06 units in the same month of previous year. While motor cycle sales were up11.71% at 9.84 lakhs units, Scooter sales rose in 34.48 % to 3.58 lakhs units in May 2013-14.

**AUTOBOBILE PRODUCTION 2007-08 to 2012-2013**

category	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Passenger vehicles	17,77,583	18,38,593	23,57,411	29,82,772	31,46,069	32,33,561
Commercial vehicles	5,49,006	4,16,870	5,67,556	7,60,735	9,29,136	8,31,744
Three wheelers	5,00,660	4,97,020	6,19,194	7,99,553	8,79,289	8,39,742
Two wheelers	80,26,681	84,19,792	1,05,12,903	1,33,49,349	1,54,27,532	1,57,21,180
Grand total	1,08,53,930	1,11,72,275	1,40,57,064	1,78,92,409	2,03,82,026	2,06,26,227

**Table-4 reveal a major characteristic increasing production of car in Indian industry is heavy population, well transport facilities, improve the economic situation in the country, increasing employment opportunity in educated youth and positively increased standard of living both urban as well as rural areas etc. The production of vehicles show table-4 from 2007-08to 2012-13.**

**CONCLUSION:**

This paper analyses the attitude of Indian firms to technology development and explain its role in growth of the vehicles industry and contribution to the GDP in national development. The design and manufacturing aspects of cars segment, technology upgraded year by year a century ago. In developing country with its own specificities of demand and supply it closely related in production cars, purchasing power of people, credit wroth of customer, availability of lending facilities, standard of living and others factor are considered the sale of passenger cars. The industry continues to build automotive centres of excellence across India. The Government take necessary steps in liberalised financial sector reforms, organising special economic zone all cities and reducing the import tariffs and duties is improve the industry in future and attain the goals of VISION 2020.

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