

## AN ANALYSIS OF LEAN MANUFACTURING OF INDIAN AUTOMOBILE INDUSTRY

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### ABSTRACT

*Lean manufacturing is the concept of production and the method that was provided by Toyota, Japan, today used by many firms in the industry. "Lean is essentially a method or strategy of systemic identification and disposal through continuous improvement, which involves the constant improvement of the product at customers' pull. The primary objective is to decrease waste across all manufacturing areas including customer relationships and product design and suppliers." The automotive component manufacturing business, which improves automotive sector growth objectives, is extremely popular in lean tools and strategy. The car industry is one of the world's major markets. Today, cars have become the need for everybody. Indian autos have a large volume, but the Indian car sector is currently confronted with a major challenge, namely a slowdown. The primary aim of this study is to analyse why the car industry has slowed down. It analyses the shifting automotive industry circumstances that affect customers' buying behaviour. The examination of the sales of several car manufacturers in India. It also offers the opportunity of the future and points out the answer with the assistance of new trends to grab the market and expand sales in the future by the automotive firms. It also sheds insight on innovative automotive technology.*

**Keywords-** *automobile Industry growth market size, Consumer, Development, Industry.*

### INTRODUCTION

Lean production is frequently merely a "lean" strategy for the systematic minimisation of waste with a productive system that does not sacrifice productivity. This attitude comes from the 1990s lean recognised manufacturing system Toyota (TPM). Its focus is also on waste products owing to over-production, shipping and waiting, etc. Lean production is frequently just "lean," a systemic way of reducing waste using a production system without compromising efficiency. This attitude comes from the 1990s Toyota Manufacturing System (TPM). It essentially also covers the waste products caused by manufacturing, shipping and waiting, etc. since an interview should be considered in the Malaysian automobile parts manufacturing to study how the construction should be done. Kaizen may be generally translated and adapted to the product line as a continuous improvement system. Lean manufacturing relies on the architecture of the model line, such as tiny areas, bottlenecks and delivery areas. It essentially also helps keep the stock level and the following elements must be taken into consideration in lean fabrication, such value, stream, flow, pull, perfections etc. The fundamental objective of this research is to learn the practical analysis and improvement of the lean instrument process.



*Fig. 1: Lean technique in wheel manufacturing industry*

## INDIAN AUTOMOBILE INDUSTRY OVERVIEW

The automotive sector employs 9 million employees, including around 5% of the global total manufacturing unit employment. The car sector plays a key role. World automotive production has extended throughout North America, Europe and Asia, three primary areas. World car industry has experienced significant restructurings, and China, South Korea, and the behemoth Japan have become a main participant. India supported a central economic system in the aftermath of independence; in 1980 a partial liberalisation took place. With Maruti Udyog in 1981 the central government set up a venture. The automobiles developed by Maruti were compact, Indian inexpensive and Indian-friendly. Suzuki, Hyundai Motors and Tata Motors are dominating India's passenger vehicle markets. Suzuki has led the passenger vehicle industry with over 50% and more than 90% of brand and price competitiveness. The Indian automotive industry has its origins in 40's and has seen growth in the sector, including 100 per cent of FDI, due to economic liberalisation. The Indian automotive sector seeks global competitiveness and it is apparent that Deming quality is the second biggest manufacturer after Japan. The Indian economy has offered the greatest fuel prices and cheap ownership costs for its residents. The decision process for buyers is hence the decision-making process which is performed by consumers before and after a product or service is purchased in response to a prospective market.

### Major Developments of the Indian automobile Industry in India are as follows:

1. Jaguar Land Rover, a UK-based automotive firm, plans to produce land rover SUV for local market, and exports at its factory in Pune.
2. Fiat announced the launch of local manufacturing at its factory in Pune, an Italian manufacturer.
3. Three luxury motorcycles will be offered through the "Motorcycle chain" in Pune, which will be launched by the motorcycle company MV Agusta, located in Italy, in India.

4. The Swedish electric vehicles manufacturer Clean Motion plans to spend 10 million US dollars in India to expand its operations and to build a three-wheel Zbee assembly plant throughout the nation.
5. At a cost of fcr of 3,000 (US\$ 450.94 million), Isuzu Motors, a Japanese commercial vehicle producer, opened its Greenfield production facility in Sri City, Andhra Pradesh.
6. Honda Motorcycle and Scooter India (HMSI), a 2-wheeler manufacturer, has established its fourth biggest worldwide scooter facility in Gujarat with plans to produce 600,000 scooters per year to 1.2 million scooters.
7. US carmaker Ford has launched its legendary Ford Mustang in India and will be releasing Rs 45 (USD 66 146) and Rs 50 lakh (USD 73 496) on its pricing range in India in the second quarter of FY2010.
8. Nissan Motor Co. Ltd. is discussing electric and hybrid technologies in India with the government of India, as the government aims to minimise air pollution from automobiles.
9. Autoliv Inc., Takata Corp, TRW Automotive Inc. and Toyoda Gosei Co, the world's leading air bag providers, are establishing facilities in India and expanding capacity.
10. Chrysler, a U.S.-based automobile company, plans to produce a Jeep Grand Cherokee model in Rs3,500 (\$ 513.5 million) in Maharashtra.
11. The GLA SUV entry was determined to be produced in India by Mercedes Benz. The company's assembly capacity for India has quadrupled to 20,000 units annually.
12. Bayerische Motoren Werke AG's (BMW), locally located in Germany, has announced the acquisition of parts from seven automatic parts manufacturers situated in India.
13. The company purchased 51 percent part of the French Peugeot Motorcycles by Mahindra Two Wheelers Limited (MTWL) (PMTTC).

#### **Factors determining the growth of the industry**

- The fuel saving and fuel efficiency demand is a significant element affecting customer purchasing decisions which will concentrate on the supply of high performance goods by leading firms throughout the two-wheel and 4-wheel segments.
- Robust legal framework and financial facilities.
- Why Increased cost-effectiveness, increased demand in the sector of tiny cars and an

increasing Indian population income.

- India has the world's third biggest base of investors.
- The State Technology Modernization Fund focuses on the creation of India as a center for carmaking.
- Cheap skilled employees available.
- Industry is looking at increasing sales by knocking on women's, young people's, rural and luxury doors.
- Segmentation of the market and creation of products.

## **SWOT ANALYSIS OF INDIAN AUTOMOBILE INDUSTRY**

### **STRENGTHS**

- Investments by global manufacturers
- Indian market is very large
- Low labour cost
- Government assistance in production
- Increasing demand for international quality
- Rise in the working and middle class income

### **WEAKNESS**

- Government taxes increase the cost of manufacturing
- Lack of Research & Development
- Lack of appropriate manufacturing units
- Production costs are generally higher than some other countries like China etc.
- High interest rates
- Labour Productivity is low
- Local demand is still towards low cost vehicles, due to low income levels

### **OPPORTUNITIES**

- Rising rural markets
- Increase in Population
- Reduced excise duty
- Growth in living standard
- Constant increase in salaries/incomes

- Auto vehicle (car etc.) as status symbol
- Demand of better and latest technology

### THREATS

- High rate of interest
- Lack of technological setup for Indian companies
- Tough competition with Chinese manufacturers
- Costly raw material
- Less skilled labour
- Congestion on the urban roads

### INDIAN AUTOMOBILE INDUSTRY – CHALLENGES AHEAD

**Research And Development-** India's R&D programme is modest compared to other countries of the globe. Gasoline price fluctuations- Fluctuations in fuel costs influence vehicle demand. The gasoline price influences customer driving patterns and the sort of vehicle they are purchasing. Changes in gas prices have shifted people's choice to more efficient automobiles.

**Poor Infrastructure** - In the Indian automobile sector, poor road infrastructure is by far the largest challenge. Transport legislation is not well-complied with and obeyed, resulting in one of the world's highest per capita accident rates.

**Innovation** – Every sector's competitiveness relies on its ability to innovate and improve. It is also important to recognise that labour costs, responsibilities, interests and economies of scale are the determining factors in competitiveness. It also includes, aside from productive human resource, key goods and technological innovation. The car manufacturers must find governmental regulations that promote innovation.

**Stiff Competition** - There is a severe rivalry amongst car companies and everyone wants to acquire a large market share. The producers' margins are reduced and the costs are reduced to be profitable and competitive.

**Taxes, Duties and Tariffs** – The tax rules in India are thought to be one of the most difficult owing to the large number of related processes. High tariffs limit trade flows, but encourage investment when there is growth in the local market.

### ACTION PLAN FOR THE FUTURE GROWTH

We have previously spoken about the slowing issue in the automotive sector. Companies should attempt numerous approaches to expand their market. Companies must be ready for the rise of the automotive sector with new dealers and models. The basic values of technology, quality, performance

and uniqueness must be focused on by companies. It is not unexpected that Indian car industries have had significant growth rates in recent years in line with the country's equivalent strong GDP growth rates and revenue growth. Rural India's increased buying power, quicker construction of roads and roadways help feed the need for mobility and cars. Whilst customers' personal tastes and lifestyles are changing, businesses should produce new car designs that can meet current customers' requirements. Electric cars might be the alternative for Indian car customers based on a research conducted by industry experts. These cars are environmentally friendlier than ordinary cars. At now the only electric vehicle (Reva car) in the nation is introduced by Mahindra & Mahindra. In addition to the Reva, Toyota Prius is a hybrid car for the Indian market. In the light of all the disadvantages, experts in the sector still believe that electric vehicles will acquire importance in Indian automobiles in the years to come. The Indian government said in the 2010 Union Budget that it will grant funding to boost hybrid and electrical models. OEMs should be focused on addressing gaps and creating and creating value for money items in their respective portfolios. Companies need to think about strategies to increase fuel economy in R&D operations. In order to make the components that are price efficient and biodegradable, there should be a constant development of existing and new resources and techniques. Today, the senior management of each automotive firm is primarily responsible for sharing information and skills in the endeavour to launch new vehicle phases. In order to tackle the slowing issue, a new invention needs be made in the Indian car sector.

## **CONCLUSION**

The aim of this research was to explore how lean manufacturing strategies and associated tools operate in the automotive sector through their application and practical analyses. With the lean production of the project for the production of car components, a level of the inventory which is the mother of the waste is reduced. Waste is automatically lowered when the inventory level has been decreased. This ensures optimal performance on the assembly line and on the control and test line. There are also concrete advantages in cutting cost savings, conserving space and improving processes etc. If we do correctly, Lean is a continual process of improvement and may reach really spectacular outcomes. The key result after being well-implemented in the automotive sector is that teamwork is mostly required and the lead time is also improved from the commencement of production to the delivery time and flexibility of the product. From the aforementioned research it can be stated that the demand for automobiles also depends on several factors such as comfort and financial costs, density of the vehicle, market form and profitability. There is thus an enormous market for cars that has to be exploited by new technical breakthroughs. Clearly the marketers have a chance to slow down for fresh innovations. By performing research they are able to achieve new inventions. Automotive businesses will have to manufacture vehicles of this sort that may motivate buyers to buy cars. The slowing phase should thus be taken by enterprises as an age of innovation. It may lead to client satisfaction and revenue growth. Finally, we conclude that the lean production project of automotive component production provides us with the knowledge to maintain the product level that contributes to the overall development.

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