Trend in Asian and European Automobile Industry and its Challenges

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Abstract: The automotive industry has come a long way since its starting with a horseless carriage in the 1860s. The automotive sector is regarded as an important driver of economic growth. The paper looks into the ongoing development in the automobile industry. The current study is explanatory in nature and gathers data on the automobile industry. It provides in-depth knowledge of the most recent developments in this sector. The results show that the Asian market, with its availability of a large and cheap labour force and growing market, has seen significant maturation. In contrast, with its culture of research and innovation and the presence of major automobile companies, the European market has been able to draw growth from other parts of the globe, which has ultimately allowed them to maintain their stance in the market. There has been massive development in the automobile sector in recent years. But an increasing number of competitors, environmental laws and other multiple factors are affecting the industry. The findings implies that these factors need to be properly tracked as it plays a crucial role to predict the future market and helps in better understanding the automobile market to gain sustainable competitive advantage.

Keywords: *Automobile, challenges, Asian market, European market*

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INTRODUCTION

There has been a remarkable development in the automotive industry with the changing business environment and innovative technology. In the late nineteenth century, Europeans invented automobiles but American companies like General Motors and Ford have found ways to produce automobiles for the large market. Later, Japanese companies started learning about the design and manufacturing of automobiles and companies like Toyota, Isuzu and Nissan started producing automobiles and became highly efficient in production and sales. After that, the high demand and production have led the companies to further development of management techniques and policies, use of in-house factories and subcontractors, quality control and global manufacturing and production.

The automotive domain is one of the largest, most internationalized, and competitive industries. The industry is constantly evolving and always finding new ways to make the manufacturing and production processes effective. Since its development, the industry has also been able to meet with the massive and diverse demands of consumers by careful management of its dependency in the specialized system and logistically handling the manufacturing process following lean, just-in-time and multiple innovative processes. Apart from that, government policies also played a vital role in attracting investment and protecting the industry in the early stages.

Currently, there have been multiple changes in the Asian and European markets, which is driving the automobile industry. The advancement of technology has made a massive effect on the industry like the invention of self-driving

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cars and electric cars. The transformation of the industry has caused changes in multiple policies and laws regarding the automobiles along with production, process and strategies followed in the automobile industry.

The numerous changes within the automobile industry have caused drastic changes within the automobile market.

UNDERSTANDING THE MARKET

Global Market

The global market of automobile production in early 2000 was mostly taken by Europe, North America, and Japan. But with time, there has been a considerable rise in the demand and the production in the market which has led to a large number of vehicles being developed in Asian countries. In 2018, the largest portion of automobiles was produced in the Asian countries, with China at the top.

Figure 1 *Share of World Motor Vehicle Production* (Source: (*European Automobile Manufacturers' Association, 2019*))

Asian Market

Asia has played a major part in automotive production; China accounted for market growth of three quarters in 2016 (IHS Markit, 2017). Though South Korea, being a relatively late entrant in the automobile industry, has made massive progress and now the country is exporting the cars to a developed market (Mukherjee & Sastry, 1996). Multiple Japanese, Korean, Chinese and other Asian carmakers are using emerging technologies, like the battery system, and taking advantage of their suppliers (Berger, 2017; Lopacinska, 2016). Asian automobiles are offering transition to efficient innovation. Like in 2014, Toyota and Hyundai were trying to launch the first mass-produced fuel cell vehicles and leading the way to the future of mobility (Nikkei, 2014). While Korean and Japanese automobile makers were also dominating the lithium-ion batteries world (Lowe, Tokuoka, Trigg, & Gereffi, 2010). The Chinese car manufacturer is innovating a new variety of hybrid and electric cars to take over their Western and Japanese competitors (Wang & Kimble, 2010). Apart from that, Asia is seen as an economical testing ground for new technology. This has allowed the Asian market to take advantage of various available resources and gain a competitive edge among their European and North American competitors.

Looking into the ASEAN market we can see from Figure 1 that there is a growing Automobile production in ASEAN countries which has been mostly dominated by Thailand, Indonesia and Malaysia. The main attractive feature of ASEAN market has been low cost labor and tariff which has generated multiple foreign investments. But the countries are also focusing their strength of government policies and engineering to get the market expansion. For e.g., in 2006 Malaysian automobile industry took the advantage of the National Automotive Policy (NAP) to gain competitive advantage to manufacture more automobiles.

The foreign automotive companies have set up automotive manufacturing plants in ASEAN countries and have successfully implemented their practices. However, most of the automotive sites are controlled by foreign-owned companies from the car producer to components producer because of their global value chain. As a reason for this scenario, the foreign producers have strong influence and control over the automotive industry as they govern the capital, technology, R&D and processes. Furthermore, a large number of vendors and high-valued automotive components are also controlled by foreign manufactures (Natsuda & Thoburn, 2013; Tai, 2016; Wad, 2009).

Figure 2 Total Production Passenger and Commercial Vehicles for ASEAN countries 2010-2015 (AAF, 2015)

European Market

The automotive industry plays a crucial part in Europe's prosperity. The European market is among the world's biggest producers of motor vehicles, which is represented by the largest private investor in R&D. The automotive sector represents 13.8 million Europeans, including both direct and indirect jobs, which is about 6.1% of the total EU employment. Apart from that, 2.6 million people directly work in the manufacturing of the motor vehicles, which represents about 8.5% of EU employment in manufacturing (European Commission, 2016).

European automotive market differs from the Asian and North American markets in a number of ways. For example, in the European market, the consumers' demands and multiple regulatory systems have created major segments for electric cars and diesel-powered cars (Todorovic & Simic, 2018). The European automotive market has also done specialization in sport, racing, and luxury vehicles. The novel demand and consumer need have led to multiple technological and industrial developments. Besides this, there is a low number of cars per household compared to the North American market. This is also the result of the European public transport system and road conditions (MacNeill & Chanaron, 2005). Although the European market consists of multiple countries with their own demand with its own localized issue and policy, so different rates of growth are possible in different member states.

In terms of European policy, (Jürgens, 2003) has mentioned that European policy is clearly driven to internationalization and free market but consists of a number of unique features. For example, the working time directive, the existence of the European work Council, and agreement of the concept of rewarding system to improve production efficiency and focus on the need for high-level skills and trust. Also, the European member states have given priority to broad research agendas like environmental protection, technological advancement, and mobility.

European automobile sectors have a high degree of outsourcing for production (Chanaron, 2001; Womack, Jones, & Roos, 2007). In the late 1900s due to the threat of increasing imports from Japanese and American companies, European manufacturers started outsourcing to improve quality and reduce cost. There was an elite group of large suppliers; in some cases, outsourcing of modules, like interiors or braking systems, was allowed while in other cases, the suppliers and contractors were allowed to assemble the components. Overall, this has led to the growth of European vehicle manufacturers and the development of the industry segment with a contribution to design and engineering (Chanaron, 2001).

In 2018, 16.5 million passenger cars were made in the European Union (EU). There are 309 automobile assembly and production plants in Europe. 137 of these plants produce passenger cars, 37 produce light commercial vehicles, 59 produce heavy-duty vehicles, 47 produce buses, and 72 produce engines ("Interactive map," 2019). Figure 3, shows that Germany is the biggest producer of passenger cars in the EU. Apart from that, the chart also shows the decreasing number of productions in every country in the EU except the Czech Republic, France and Italy between the years 2016 and 2017. The Figure 4 illustrates the increasing number of light commercial vehicles from year 2012 in the EU. The heavy and medium commercial vehicles production in 2018 has not changed a lot from the beginning of 2007.

Figure 3 Top 10 Passenger Car producers in EU (Source: (*European Automobile Manufacturers' Association, 2019*))

Figure 4 Commercial Vehicle Production in the EU (Source: (*IHS Markit, 2017*))

With its vision of 2050, the European market is aiming for long-term sustainability of the automobile industry. According to AECA, there has been a significant decrease in the waste in European automobiles in terms of Volatile organic compounds (VOC), CO₂, and water to obtain higher efficient automobiles with reduced environmental impact.

MAJOR FACTORS AFFECTING THE INDUSTRY

Government Initiatives and Policies

The policies and initiatives within a country play an important role in the automotive industry. For example, European countries have strong concerns and rules regarding environmental sustainability (like the limit on CO₂ emissions) and road safety. The other rules are regarding the use of allowable substances, standards for the safety of occupants and pedestrians, and recycling or end life-cycle of vehicles. Similarly, Asian countries have their own set of rules. Like in Indonesia, there is a strong promotion for the companies owned by Indonesian citizens. In terms of India, they have a policy like “Make in India” initiative, which encourages domestic manufacturing and production. The government is also promoting eco-friendly cars and has made the mandatory blending of 5 percent ethanol in petrol. In China, major cities only distribute limited vehicle licenses to combat worsening traffic congestion and air pollution. Beijing employs non-transferable lotteries while Shanghai uses an action system. Besides that, China also has Corporate Average Fuel Consumption (CAFC) standards to control the official use of fuel intensity levels. While other growing markets like Thailand, Indonesian and Malaysia have used high tariffs and restrictions of origin were used to protect the domestic industry.

Research and Development

Research play a crucial role in the automobile industry. With increased competition, established automobile manufacturers in Asian countries are also becoming more conscious about technology and quality. In India companies are incorporating ISO 9000 certification and Total Quality Management as explicit corporate goals. European countries have also made a significant improvement to improve efficiency and decrease waste (Bloemhof-Ruwaard, Van Beek, Hordijk, & Van Wassenhove, 1995; Quadrelli & Peterson, 2007; Thiel, Perujo, & Mercier, 2010). The rigorous research has led to the development of the modern automobiles. Similarly, the Asian market is entering the modern technology era with the introduction of the multiple fuel-efficient models, emission control techniques like catalytic converters and injection technology and addition of multiple electronic entertainment and vehicle safety gadgets. But definitely, European car manufacturers have surpassed the technologies and improved mobility with electric cars, traffic management systems, and novel new inventions. There is a constant race in the automobile industry to bring creative new formulas and ideas to improve the user experience and reduce environmental impacts.

Innovation

The competitiveness of any sector depends on the capacity to innovate and upgrade. It is also significant to understand that labor cost, duties, interest, and economies of scale are regarded as the determinants of competitiveness. Innovation can be done in the core product and technology apart from the productive human resources. The automakers will have to look for the policies of the state that encourage innovation.

The development of Self-driving cars and efficient engines have driven a new path for the modern automotive industry. From Figure 5, the potential of an innovative solution, like a self-driving car in the coming future, can be seen. Similarly, more encouragement to innovate in the automobile sector is required for its growth and development.

Figure 5 Forecast of Global Self-Driving Car Sales (Source: (IHS Markit, 2017))

Impact of Information and Communications Technology (ICT)

The advancement in ICT has given an opportunity for the development of operation integration and track of information throughout the supply chain (Volpato & Stocchetti, 2002). This has aided in the improvement of precision, speed and delivery with better data availability for enhancement and decision-making. Apart from that, the entire chain of actors within the supply chain and their relationships can be easily monitored and analyzed.

The approach of keeping track of everything and getting the latest technology doesn't come without its drawbacks. The installation cost for the system is expensive, and the additional cost is required with product redesign or future changes. There is a limit to the amount of scale, efficiency and flexibility that can be achieved with the system. Because of these hindrances, the proper tracking of the indicators should be done to predict the future market. Moreover, the rival companies are also following the latest technology, so there needs to be some sort of differentiation to strategize the available technology.

Stiff Competition

There are numerous challenges in the automotive industry as it seeks global growth opportunities. Automotive sales in Markets like Japan and Europe are flattening. There is a high competition in the market as the compound annual growth rate is only 3.1 percent from 2014 to 2019 compared to 4.7 percent from 2008 to 2013. There exists a tough competition among the automobile players and all desire to capture a big share of the market.

Figure 6 *European Light Vehicle Sales* (Source: (IHS Markit, 2017))

Figure 7 *Japanese Light Vehicle Sales* (Source: (IHS Markit, 2017))

The hyper-competitive market is bound to continue with the emerging technology and globalization. The outsourcing of jobs has led to growth in scale, reach to the different corners of the world, and effective manufacturing but has also led to the emergence of new global players in the market. The home players of the developing market have entered the European and US markets. For example, an Indian company, Tata, has been able to enter European, American and other parts of the world. Similarly, Chinese manufacturers, such as FAW and SAIC, have been able to do the same. These challenges in the automotive industry are bound to grow with an increasing number of players competing for every piece of the market share pie.

CONCLUSION

In everyday human life, the automotive industry plays a crucial role not only in mobility but also makes an impact on the economic, social, and environmental aspects (Xia, Govindan, & Zhu, 2015). According to the demand and continuous competition within the market, both the Asian and the European markets are adapting to the multiple factors affecting their growth. The laws and policies within the country have played a major role in the strategies and the direction the companies are taking. But the innovative culture, making changes according to the consumers' needs, and sophistication of the company to sustain its performance and growth have been the major contributor. Apart from that, there is a dependency on the core internal combustion technology but slow transformation has been seen to electric power and alternative sources.

The massive uncontrolled increase in automobiles has a negative impact on the environment and degrades the air quality and causes global warming (Orsato & Wells, 2007). Many firms have shifted towards implementing corporate sustainability due to government policies and environmental challenges (Govindan, Azevedo, Carvalho, & Cruz-Machado, 2015; Zhu, Sarkis, & Lai, 2007). Multiple researches have been done to allow companies to take the opportunity of environmental rules for the profit and social benefits (Carter & Rogers, 2008; Jayawardhena & Foley, 2000; Linton, Klassen, & Jayaraman, 2007).

The constant competition within the industry and development has resulted in various changes, giving rise to multiple variables affecting the industry standards and performance. There is a need to understand these factors to make better decisions and understand the relationship between various factors. In relation to this, companies can maintain their strategy, philosophy, objectives, measures, and activities accordingly.

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