

Environmental Analysis of Automobile Industry

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Abstract

The automobile industry is one of the most important industries in the world, providing mobility for all. The industry has evolved in the last few years, not only in technology but also in how much are polluting, how we drive it and how safe is.

The report will discuss the automobile industry challenges and transformation.

In the report is included an analysis of the product life cycle overall the industry with all stages. It included an analysis of all forces which are shaping the industry and discussed the Covid-19 impact have on them.

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Table of Contents

Abstract.....	2
1. Introduction	4
2. Product life cycle	4
3. Porter's five forces	5
4. PESTLE Analysis	7
5. Challenges with electric cars	9
6. Conclusion	9
7. Recommendation	9
References	10

1. Introduction

The evolution of the automobile industry had many changes and challenges over the years and was influenced by loads of innovations that impacted the cars, fuel, components, manufacturing process and also by the supply chain and markets behaviours.

As many countries around the world are more aware of climate change, the automobile industry had to adapt which make them respond to this with different innovations which involve the reduction of fuel consumption or the appearance of a new type of engine, electric.

The automobile industry is a huge market globally with high competition from many small and large players trying to increase the market share with different competitive advantages.

2. Product life cycle

The product life cycle is divided into four stages which start with the product coming into the market, with all the marketing strategies for promotion, continue with the growth phase where consumers have complete knowledge of the products. The maturity stage is where the company is making the most profit but also where is the time to add improvements to the product to maintain a longer stage of maturity. The last stage, decline, is coming straight after maturity which can determine the companies from the automobile industry to upgrade the product or to replace the product with a better one (McAfee, 2002, pp. 94-95).

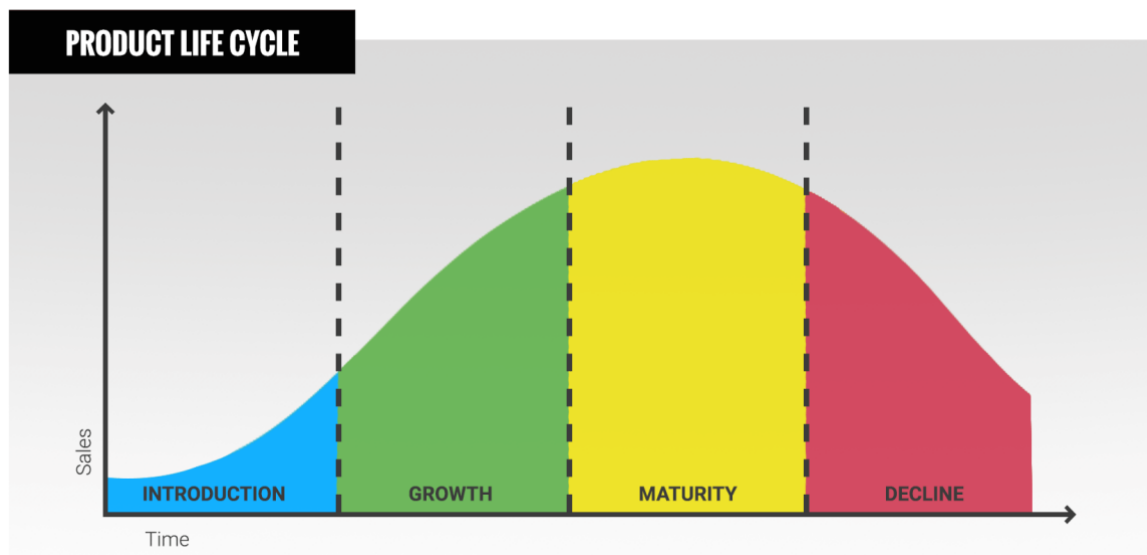


Figure 1 Product Life Cycle (Sraders, 2021)

Analysing the automobile industry in regards to the product life cycle we can see that in the introduction stage we have now autonomous vehicles which are present on the market as a feature for Tesla cars, presented as an autopilot driver-assistance (Tesla, 2021) and later this year from Volvo (Volvo Cars, 2022). Also, other companies from the automobile industry are advanced in releasing self-driving cars, Ford, General Motors, Toyota, Geely and others are

developing the technology at a slower pace due to financial reasons. The technology is expensive to develop and the price will be higher and not many drivers would afford it.

In the growth stage, we have electric cars. There are many carmakers that offer this product and since governments have a pledge to reduce carbon emissions, we can see a higher demand for electric cars. As an example, in the United Kingdom, which is aimed to be carbon neutral by 2050 (Gov.uk, 2021), has the second place for the best sold car in 2021 a Tesla Model (SMMT.CO.UK, 2022). Also, across Europe, many governments offer incentives and tax benefits to buy an electric car (ACEA, 2021).

Electric vehicles can be divided into three types: Battery Electric Vehicles (BEVs) which have zero emissions, Plug-in Hybrid Electric Vehicles (PHEVs) which have chargeable batteries but also an internal combustion engine and Hybrid Electric Vehicles (HEVs) which have an electric engine to assist the internal combustion engine with all the energy coming from gas (EVgo, 2021).

At the maturity stage are all cars with an internal combustion engine and the perfect example is Ford Focus which is at its highest peak due to continuous improvements made by Ford over the years. Due to government regulations, this type of engine will soon see a decline in the market (Jolly, 2020).

The decline stage follows after maturity and this will happen soon for all cars with an internal combustion engine. The latest popular model which is in the decline stage is Ford Mondeo, production stopped in December 2021, and the Volkswagen Passat sedan version which will have an end of the cycle by the end of 2022 (Page, 2022).

Some manufacturers continuously improved some products to be able to give an extension and keep the products aside from the decline stage.

3. Porter's five forces

Porter's five forces model was introduced by Michael Porter and is analysing the competitive forces which shape the competition in the certain industry: rivalry within the industry, suppliers, substitutes products, buyers and new entrants (Johnson, 2014).

The threat of new entry

The threat of new entrants in the automobile industry is high but the barrier, due to the new electric trend, is low. To enter the market, require a large amount of capital and to pass all the legal requirements. The manufacturers of internal combustion engine cars have well established brand image and reputation made over the year but with the new electric cars trend, we can see many companies that enter the market and rise quickly. The best example

is Tesla which enters the market straight with electric cars and had success. There are many new companies that enter the market and they have easy access to the same supply chain as the well-known brands. Chinese companies rise in the market due to a better supply chain and government support (MIT Energy Initiative, 2021). The latest big brand that announces a new electric car, Vision-s 02, to be launched is Sony (Sony, 2022).

Bargaining power of suppliers

The bargaining power of suppliers is high nowadays and this is due to disruption in the supply chain network which was affected by the impact of the Covid-19 pandemic rules of each country. The transport of goods and the shortage of semiconductors will continue into 2022 (Warrick, 2021). Tesla started to adapt the software of the cars in response to the shortage of semiconductors to be able to use more suppliers (Hawkins, 2021). Although this issue is affecting some suppliers, they are in the market many suppliers that offer parts. Overall, the issue with the suppliers and the Covid-19 pandemic was affecting the production of cars worldwide.

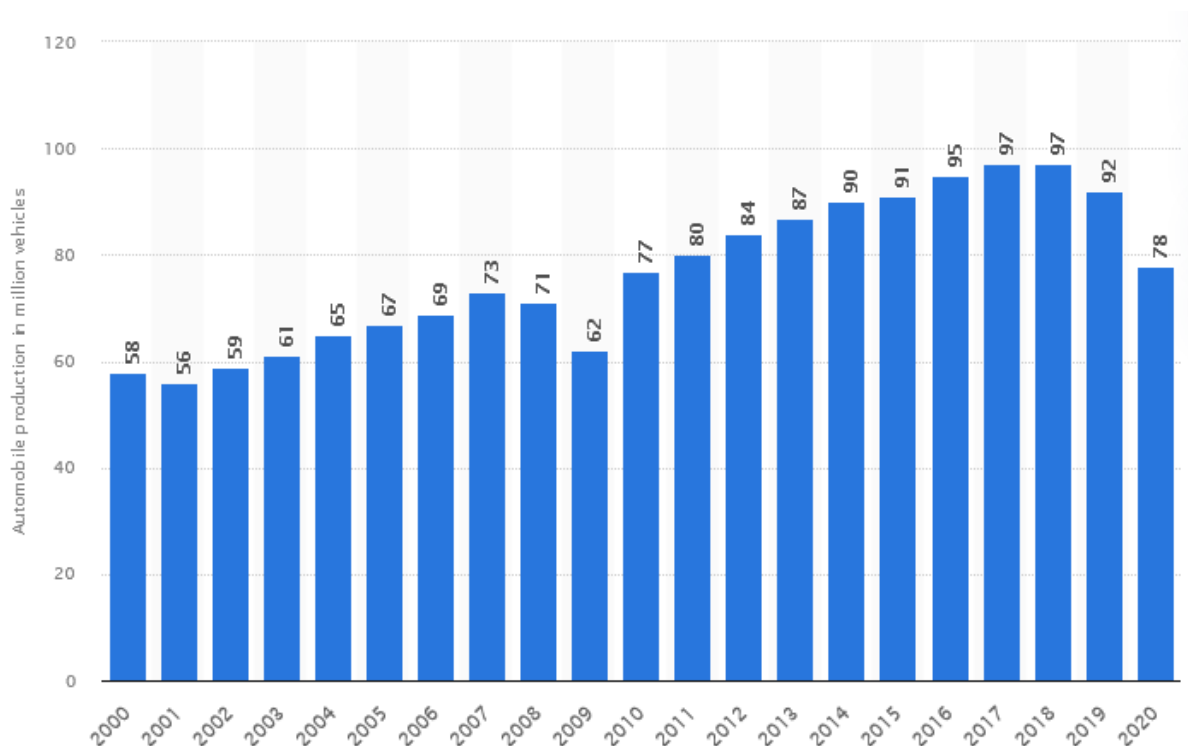


Figure 2 Worldwide cars production 2000 to 2020 (Placek, 2021)

Bargaining power of buyers

The bargaining power of buyers is high for the market that offers cars with internal combustion engines but in the market with electric cars, the power is low because the market is in a growth

stage. For the internal combustion cars, the buyers can easily switch to another brand or make a decision depending on the price.

Threat of substitutes

The threat of substitutes is high because they are loads of alternatives to cars such as electric scooters, bicycles, buses or trains. More and more local authorities encourage the transport with bicycles and buses to tackle the environmental challenges. Also, the alternatives to cars will cost less and will be more friendly with the environment.

The threat of competitive rivalry

The competitive rivalry in the automobile industry is high. The automobile industry for cars with an internal combustion engine is large and at the mature stage. The electric cars market is at a growing stage and the competition is quite intense with many start-up companies and the big manufacturers switching to electric. The largest car manufacturer in 2020 was Toyota (Carlier, 2021).

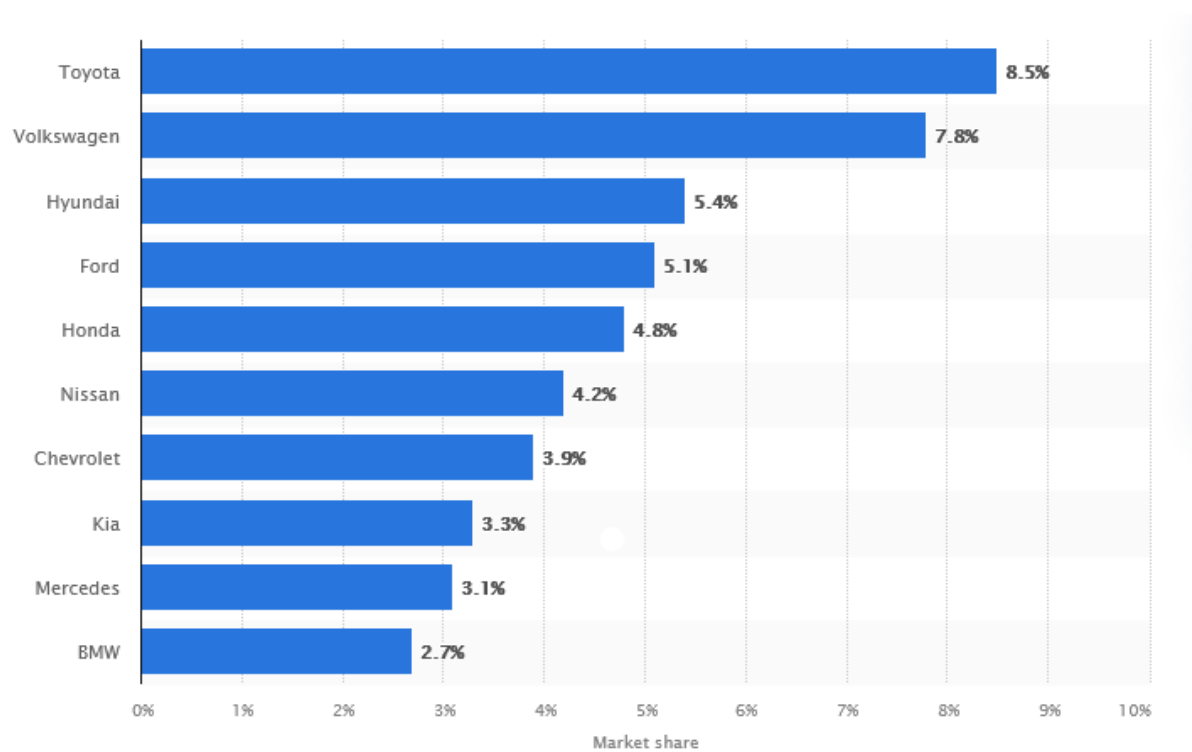


Figure 3 Market Share in 2020 (Carlier, 2021)

4. PESTLE Analysis

The PESTLE analysis is a tool that identifies the external forces which a company is facing. The analysis is formed from political, economic, social, technological, legal and environmental forces.

Political factors affecting the automobile industry

- The governments incentives for promoting electric cars.
- The investments in the transport infrastructures across developing countries.
- Demand from governments to reduce the dioxide carbon emissions.

Economic factors affecting the automobile industry

- The increased demand for cars in many developing countries.
- E-commerce will need a larger fleet of commercial cars.
- The incentive offered by some governments will help the market of electric cars.

Social factors affecting the automobile industry

- Awareness of the impact of cars on the environment will increase which will mean a high demand for non-polluting cars.
- Covid-19 pandemic stopped the movement of people due to lockdowns and social distancing.
- Urbanization has a positive impact on the demand for cars.

Technological factors affecting the automobile industry

- Increase demand for non-polluting solutions for transport will decrease the demand for internal combustion cars.
- Strong competition for a fuel-efficient car.
- Well known manufactures must adapt to deliver fuel-efficient cars or will lose market share.
- Safety car innovations will have a higher demand in the developing countries to reduce the victims of accidents.
- A new trend in the automobile industry is starting with self-driving cars, the future of cars.

Legal factors affecting the automobile industry

- The legislation and regulations are often changing to reduce pollution and increase safety features.
- Governments offer protection for local markets by introducing high imports taxes.

Environmental factors affecting the automobile industry

- Carbon emissions from cars are huge and this issue is addressed globally by most governments.

- New regulations for battery recycling requirements as the electric cars demand increase.

Cars are part of our life and the automobile industry must adapt to tackle the environmental challenges which affect our planet. Electric cars will help in this matter.

5. Challenges with electric cars

The success of the automobile industry until nowadays was the internal combustion engine but the future is the electric motor powered by energy which is stored in batteries (Goel, et al., 2021).

The market for electric cars is quite limited at the moment and they are not accessible for everyone but the demand will increase which will make decrease the prices. The most affordable will be the hybrids models. The life of batteries is limited only to a few years which will add an extra high cost for users to replace them. The impact on the environment is not zero due to indirect factors like from where is coming to the electricity, is not 100% green, and also from the production of parts (InterCity, 2021)

Due to the Covid-19 pandemic, the supply chain network is distributed which means fewer electric cars produced by manufacturers (Beredo III, et al., 2020).

6. Conclusion

The automobile industry is one of the most important industries globally which now is entering a transition phase, the transition to non-polluting vehicles. This is due to agreements made around the globe such as the Paris Agreement which made several countries have strict control for carbon emissions made by new vehicles.

All this is coming with many challenges for the industry which include disruption in the supply chain due to Covid-19, batteries life, recycling programs demand by governments and the race against climate change.

The industry is at the transition phase which allows new starters to come to the market which will make will increase the competition in the market. Even though the transition is slow a the time in the next few years this will have a better impact on everyone.

7. Recommendation

They are a few recommendations after this report to the automobile industry:

- Increase the research and development on batteries for longevity and capacity.
- Take an example from Tesla and adapt the software to the supplied parts.
- Create partnerships to accelerate the extension of the charging network.

- Adapt the sales strategies with e-commerce solutions as an epidemic prevention measure.

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