
ENVIRONMENTAL ANALYSIS OF ELECTRIC VEHICLE INDUSTRY

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Introduction

Electric vehicle is running purely on electricity, stored in an on-board battery charged from the power supply (usually at a specific charging point) (Foundation & Company, 2014).

This project is based on a case study and additional research, focusing on the electric vehicles, how they are penetrating the market and benefits from them. It will be analyzed how the governments in Europe are encouraging the increasing the number of potential buyers and consumers of electric cars. Also, this project will emphasize on the environmental aspect and how electric cars have positive impact on the environment. Economy wise will be analyzed the growing market of electric vehicles and some of the challenges the market meet. To analyze Electric vehicle industry will be used PESTEL and Porter Five Forces. They will provide clarity regarding the state of the market, how the market operates and the factors who determine the position of electric vehicle on the car market.

Pestel

An analysis of PESTEL is an acronym for a method used to identify and examine the macro (external) powers that an organization faces. The PESTEL abbreviation stands for Political, Economic, Social, Environmental, and Legal. It can be reduced to PEST, or some areas can be added, depending on the organization. (Wetherly & Otter, 2018)

Political factors

Solid support from government increases further EV sales & growth. Governments around the globe tend to advocate a stronger emphasis on EVs with subsidies, incentives, tax exemptions and loans for Electric vehicle manufacturers and purchasers. Governments are investing in EV infrastructure and mobility programs to encourage supply. (Foundation & Company, 2014) In **United Kingdom** a customer can receive a discount on the price of electric or low emission vehicle through a grant that government provide to car dealerships and vehicle manufacturers. A customer can get maximum a grant of 3000 GBP. Vehicles eligible for a grant are cars, vans (regular and large), trucks, motorcycle, mopeds, taxis. Only cars with cost less than 50, 000 GBP are applicable. This is the retail price recommended, includes delivery fees and VAT. (Gov.uk, 2020)

In **Norway**, Registration and circulation taxes, which usually are applicable for conventional vehicles, not electric vehicles, are some of the highest worldwide. Because of that basically, the cost of electric vehicle goes on the same level as conventional cars. Such taxes have promoted the use of electric vehicles, resulting increasing CO saving of 16% for new passenger car registers. Driving Electric Car= less taxes. (Agency, 2019) (Foundation & Company, 2014)

Netherlands launched a tax system that favored electric vehicles and low-emission conventional vehicles in the period 2010-2017. Over the years, the tax system became more stringent and focused on the introduction of zero-emission vehicles. In result the sales of Electric vehicles increased. (Agency, 2019)

Economic Factors

Growing Market. The European Automobile Manufacturers' Association states that electric vehicles market share (for EU) in the 3rd quarter of 2018 was around 30 % higher compared with 2017, that could be considered as an opportunity. (Niestadt & Bjørnåvold, 2019)

Batteries are essential for Electric mobility. The cost of the batteries appears to decrease slowly since 2017. The production market for batteries is huge, estimated of 250 billion euro annually. It's mainly dominated by China. The EU want to produce more EV batteries in Europe, using mainly materials sourced in Europe. In May 2018 European Union presented a strategic action plan on batteries that builds on the hard work accomplished by the European Battery Alliance. (Niestadt & Bjørnåvold, 2019)

Electrical Network. Study of Joint Research Centre department of the European Commission states that the EV is usually the largest consumer of electricity its owner home. According to some calculations, the study predicts that if 15 % of the vehicles on roads in Europe are electric till 2030, an additional demand of the electricity will be required. There is an option, by promoting and encouraging charging when is most convenient for the electricity grid and at the lowest price for consumers (it will be promoted as smart charging). EU can reduce the needed costs for investing in electrical network and shorten the postponements in the uptake of Electric vehicles. (Niestadt & Bjørnåvold, 2019)

Social Factors

Low-carbon lifestyle. The number of people, who decides to follow of low-carbon lifestyles is increasing constantly. More and more people get cautious about the environment and decides to go green. This is huge opportunity for the electric vehicle business. (Ferguson, 2019)

Increasing preference for renewable energy. Major demand of renewable energy from most market segments has been stated. Renewable energy consummated by residential consumers increased with 6% and renewable energy consummated by commercial consumers increased with 5%. However, industrial consumption decreased with 3% through 2019, compared with 2018. (Industrials, 2019)

Technological factors

Revolutionary technological change. Scientists are designing fast-charging batteries which could be in use in a few years. According to the new research, the new battery technology will provide the EV with 200 miles of charge (or even more) for around 10 minutes charging. Lithium ion batteries have a major impact on EV batteries, because they are able to store a big amount of energy in a compact size battery and they can be recharged multiple times. Three scientists have been awarded with Nobel prize in chemistry for their achievements and contributions to the progress and development of the batteries in October 2019. (Davis, 2019)

Increasing Electric vehicle automation. Autonomous technology integrates better with electric engines. There is high demand for Autonomous Electric vehicles (AEV). Electric vehicles are easier for computers to drive. Most Electric cars are equipped with drive-by-wire system, and it can easily substitute the conventional mechanical control, with electronic control. That generate more compatible platform for Autonomous Electric vehicles. The automation is expected to make driving safer, easier and much more comfortable. Also, it will provide business opportunities in the industry. By 2035, the prognoses are the market size to grow high reaching nearly 50% of the market. (Commission, 2017)

Environmental factors

Greenhouse gas emissions. The transport is responsible for roughly a quarter of Europe's greenhouse gas (GHG) emissions, and they have negative impact on the climate. Road transport is by far the main emitter in the transport segment, accountable for around 80 % of all European Union GHG emissions caused by the transport sector. The European Union is committed to reduce the transport gas emissions. Electric vehicles are one of the alternatives, that will help EU to reduce GHG emissions from transport. EV issue less GHG emissions throughout their full life cycle. (Niestadt & Bjørnåvold, 2019)

Air Pollution. Transport is the major reason for air pollution in urban areas. Every year more than 400 000 EU individuals die precipitately and millions more suffer from respiratory and cardiovascular illnesses as an effect of low air quality. Electric vehicles are one of the options to reduce air pollution. (Niestadt & Bjørnåvold, 2019)

Noise. The main source of noise pollution is transport. High noise levels can lead to loss of hearing, disturbed sleep, mental health issues, risk of heart disease and changes in blood pressure. Nearly 88 million people live in urban areas and nearly 41 million people live outside of urban areas in the EU are exposed to road, rail and air traffic noise levels that surpass EU thresholds, according to European Environment Agency. Electric Vehicles are producing lower level of noise than traditional vehicles. (Niestadt & Bjørnåvold, 2019)

Legal Factors

Europe on the Move. The European commission submitted “Europe on the Move” – mobility related legislations. The goal is to make Europe a leader in competitive and clean mobility. Some of these legislations are to reduce CO2 emissions from new cars and to stimulate the market interest of clean vehicles. (Niestadt & Bjørnåvold, 2019)

Battery Legislations. Legal requirements for market authorizations for batteries are put in place. Also, there requirements regarding their proper handling, at the end of their use in Electric vehicle. (Niestadt & Bjørnåvold, 2019)

Cancellation provisions in a European Motor Vehicle Purchase Agreement. The European Motor Vehicle Purchasing Agreement will ensure that information about the time limit and procedures for exercising the statutory right of withdrawal in a distance or off-site contract is offered to the customer in the appropriate form and content. (Kampman, et al., 2011)

Porter 5 forces

Definition

A framework used to evaluate the competitiveness and the upcoming profitability of an industry is Porter 5 Forces. It suggests that the competitive rivalry is comprised of five competitive forces. The new competitors entering the market could be seen as a threat; risk of substitute products; the power that both customers and suppliers have are all factors influencing the competitiveness between present rivals. What is more, the more powerful the competition between companies in an industry, the lower their outcomes/performance are and vice versa. (Jeffs, 2008)

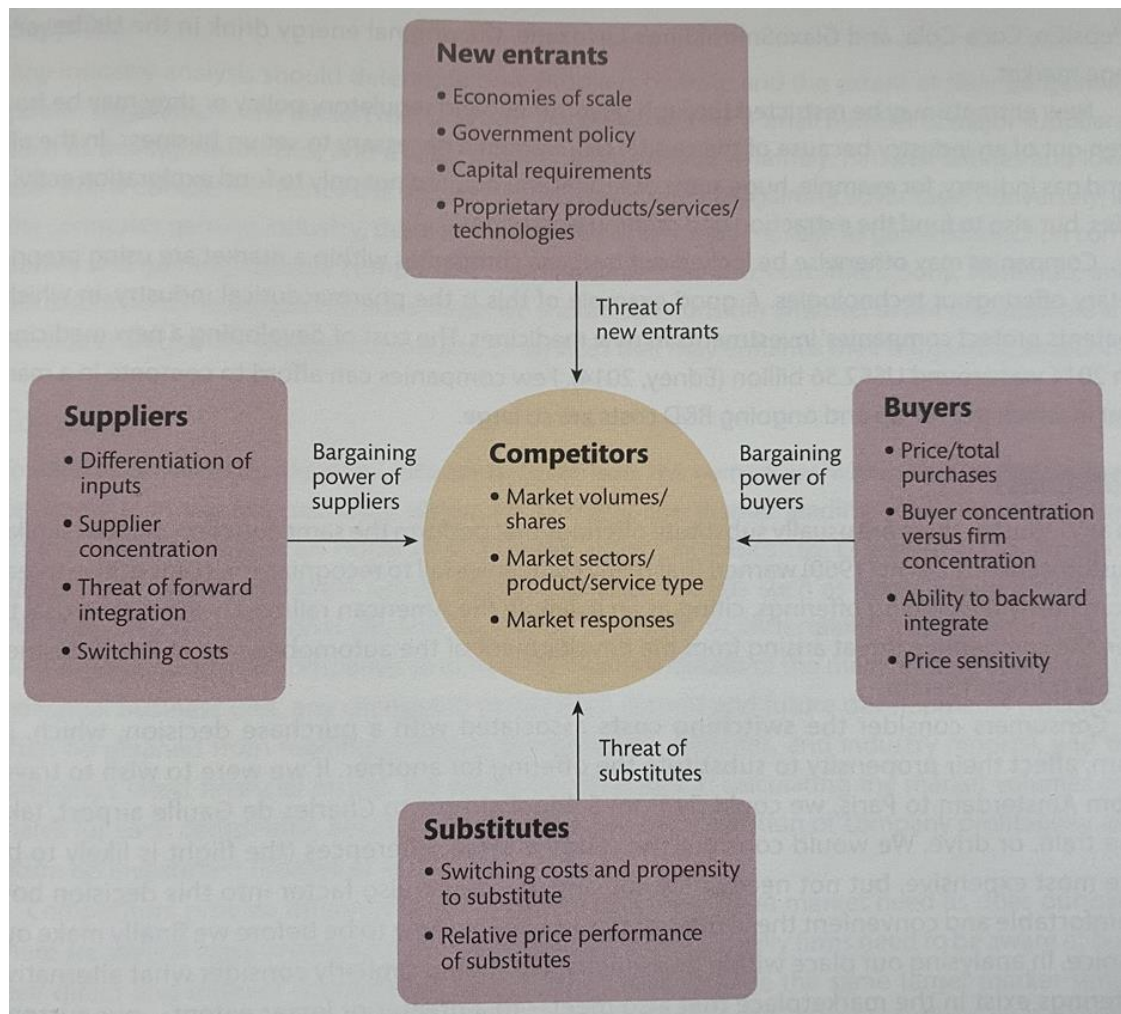


Image courtesy: (Baines, et al., 2017)

Threat of new entrants. The threat is low, because the cost for developing and creating a brand will be very high. The cost of doing the business will be very high, it takes huge investments. Also, the potential manufacturer need to have at least a basic knowledge or experience in car industry. Last but not east economy of scale will be high. (Foundation & Company, 2014)

Bargaining power of Buyer. There is increasing interest and concern about environment, also customers are starting realizing the long-term benefits from buying EV. The competition level in the industry and the threat of substitute is increasing, its high, respectively the buyers have the power. Their power could be reduced by improving or implementing new unique and desired features in customer service. (Foundation & Company, 2014)

Threat of Competitors. There are various car firms that are competing for future electric vehicle buyers. Strong competition and high buyers power contribute to intense rivalry in the electric vehicle market. New companies are entering the market, resulting in even greater rivalry. In response, current main players in the automotive industry are prepared to spend a significant budget in order to make the transition from traditional cars to electric vehicles in good timing. (Foundation & Company, 2014)

Threat of Substitutes. The threat is high. Low switching costs empower rivalry on the market, respectively enable competition. The traditional conventional vehicles are still the sales leaders on the market, because the vehicle they produce are more affordable, compared with electric vehicle. However, analyzing the threat of substitutes only in Electric vehicle sector, it could be said that the threat is still high, because more and more experienced car manufacturers get involved in the sector and invest a lot of money in their production. (Foundation & Company, 2014)

Bargaining power of Suppliers. Suppliers power appears to be low, because the manufacturers create more technological or non-technological modernizations and innovations, compared with suppliers. Most company supply for conventional traditional car industry and for EVs industry as well. (Foundation & Company, 2014)

Conclusion

Through analyzing the environmental factors, it could be said that EV has a positive influence on the environmental surrounding. Contributes to the environment and predispose people to live healthier, with less air pollution and greenhouse gas emissions. Thanks to many governments policies in Europe and around the Globe consumers have the opportunity and stimulus to buy Electric car. The opportunities for electric vehicles industry appear to be wider and wider as the growth in the market is pretty noticeable. More and more manufacturers get involved in this sector, which lead to the conclusion that EV are the vehicles of the future.

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