



Student's Name – Marina Paskaleva

Student's Number – 1909650

Module Title – Global Business Environment

Assignment Title

Environmental analysis of EV Industry 1

Module Lecturer's Name – Dr Kenny Tang

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1. Introduction

Environmental analysis is meant to assess the external market environment, which is needed for inducing a suitable change backed by the environmental necessities (Payne et al., 2017). It helps to identify the emerging trends, such that those can be used as a core point of business functioning. The purpose of the assessment is to analyse the forces that are shaping the electric vehicle industry. Volvo Cars, an automotive company, has initiated to induce electrification in its vehicle products (Volvocars, 2020). The study will identify such organisational change and the reason behind such change and as an example will be used Volvo. The need for driving towards the production of electric cars will also be analysed in the study.

2. External Forces

2.1. PESTEL analysis and ranking

PESTLE Analysis is a tool that is used to determine different external factors. It stands for Political, Economic, Social, Technological, Legal, and Environmental factors. These factors fall beyond the industry or company control and are very important. Therefore, PESTEL analysis tool is so popular and used as it helps the organisations to identify the environmental factors that have impact on their operations (Shatskaya et al., 2016).

Factors	Specific Issue	Ranking
Political	1. The exemption of tax by 22% has assisted in improving the business operation of the electric vehicle industry (Deloitte, 2019). Lowering the on-road tax by 70-75% in Europe has created a greater impact on business operation. 2. The government's initiative for the plug-in electric vehicle has also increased business growth of the	High

	automotive industry in Europe. Considering exempted tax rate of 7% for PHEV drivers also provides a scope to increase the sales volume (Baik et al., 2019). 3. The decision of Brexit has created an adverse impact on sales service of the electric vehicles. Britain's decision of leaving the European Union has created a political turmoil situation that results in declining the sales of electric vehicles (Moro et al., 2018).	
Economic	1. The increasing growth of GDP by 7% in 2019 has provided a scope to expand the business operation of electric vehicles (Deloitte, 2019). 2. Offering a wide range of electric car products has provided a scope to expand the market of electric vehicles by \$118,864.5 million in the year 2017 (Moro et al., 2018). Increasing demand for electric cars has increased the chances of expanding the business function of the electric vehicle industry in Europe intensely. 3. The increasing rate of inflation by 1.4% has increased the price of automotive industry products due to the rising cost of raw materials in the market (Doppelt, 2017). The high rate of this diversified electric vehicles has lowered the chances of retaining the involvement of a large number of consumers effectively.	High
Social	1. Rising preference of consumers has influenced the sales growth of electric vehicles. According to Deloitte (2019), 40-60% of consumers in Europe prefers to purchase EU vehicles. 2. Changes in the demand of younger population existing in urban areas have enhanced sales of advanced electric vehicles (Deloitte, 2019).	Medium

	3. Offering a wide range of PHEV vehicles at a premium price has also created an impact on the purchasing decision of consumers (Deloitte, 2019).	
Technological	1. Technological advancement has assisted in integrating low-cost Optimise Electronic Module (OEM) design in Electric vehicles. Integration of advanced battery management system helps to protect battery life within extending vehicle range (Deloitte, 2019). 2. Controlling the use of lithium-ion cell chemistries assist in improving energy density. Effective usage of the higher energy capacitor increases the chances of improving safety and security process of those electronic cars (Bolduc, 2019). 3. Advancement in battery management system will assist in managing thermal performance. Optimisation of the integrated cooling system is beneficial to improve the functioning of electric car products. Improvement in the battery pack design helps in improving the internal functioning of the vehicle (Deloitte, 2019).	High
Legal	1. The ethical guideline mentioned by Commission Delegated Regulation of EU helps to identify the protocol that all-electric along with hybrid vehicles, need to include safety device (Gov.uk, 2020). 2. Considering the vehicle safety standards has assisted in implementing advance battery system to avoid security threats in electric vehicles (Deloitte, 2019). 3. Following the legal principle of the Climate Change Act (2008) has influenced the electric vehicle industry to change the dynamics of product design to control the emission of carbon-di-oxide (Gov.uk, 2020).	High

Environmental	1. General agreement on carbon emission guideline has influenced the electric car industry to reduce the carbon emission by 37.5% in 2030 (Deloitte, 2019). 2. The green-car initiative program has influenced the launching of plug-in electronic vehicles that are essential to control the emission of carbon products (Ortego et al., 2018) 3. Introducing the zero-emission zones in prime locations of the UK has also increased the demand of emission testing process that is required to manage the functioning of the electric vehicle (Deloitte, 2019).	High
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Based on the analysis of the PESTLE framework, it is observed that the environmental factor plays a vital part in managing the designing of the electric vehicles that are introduced in the European market. Controlling the emission of fuel has assisted electric car vehicles in controlling the emission of carbon dioxide (Bolduc, 2019). Consideration of hybrid electric car models in a smaller size has assisted EV vehicles in controlling the emission of chemical products effectively. Keen observation of the carbon emission guideline has assisted in including green car initiative program to control the emission of carbon dioxide extensively. Following the guidelines of carbon emission has influenced automotive companies to include emission testing system that is highly essential to control the release of chemical products (Hooftman et al., 2018). The impact of political factors such as the reduction of road tax has also influenced the business expansion of electric cars. Reduction of road tax service has assisted in maintaining premium pricing of this product that draws the attention of a large number of consumers. Exempted tax for physically disabled drivers has increases the chances of reaching a large number of consumers (Deloitte, 2019). However, the decision of Brexit might create a problem in managing the sales function of this electric vehicles effectively. Increasing demand for consumers has also created a greater impact on the selling rate of EV vehicle in the European market.

Consumers belonging to the young age group in urban locations have focused on buying PHEV vehicles at a premium price. The impact of technological factor is also evident in the business growth of the electric vehicle sector. Technological integration has enhanced the scope of including Optimise Electronic Module (OEM) with PHEV vehicles. The use of an advanced battery management system increases the chances of implementing high-quality safety measures (Deloitte, 2019). The industry has inclined towards using lithium-ion cell chemistries to improve the cooling process, which is essential to control the battery damage. Keen observation of the legal guideline vehicle safety standards has encouraged in adopting advanced battery cycle to control the emission. Consideration of Climate Change Act (2008) has been beneficial to improve product design that is required to control emission by EV vehicles introduced in the European automotive market.

2.2 Porter's Five Forces

The Porter's Five Forces is strategic management model for evaluating the power of forces prevailing within a market environment (Rothaermel, 2015). As per Porter, there are five forces within the market environment, such as the bargaining power of suppliers, bargaining power of customers, the threat of new entrants, competitive rivalry and threat of substitutes.

Bargaining power of suppliers

The bargaining power of suppliers in the electric vehicle industry is high since the industry is entirely dependent on the supply of EV batteries (Bolduc, 2019). As per the Forbes report, the electric vehicle industry is expected to increase by thrice at the end of 2021 (Keating, 2019). Therefore, there will be high tension among the companies upon choosing the best suppliers, which will make the bargaining power of suppliers high.

Bargaining power of customers

The bargaining power of customers is high in the industry, as most of the ICE (Internal Combustion Engine) driven vehicle producing companies such as Hyundai-Kia, Daimler AG, Tata Motors and Volkswagen Group has switched to BEV (Battery Electric Vehicles) technology.

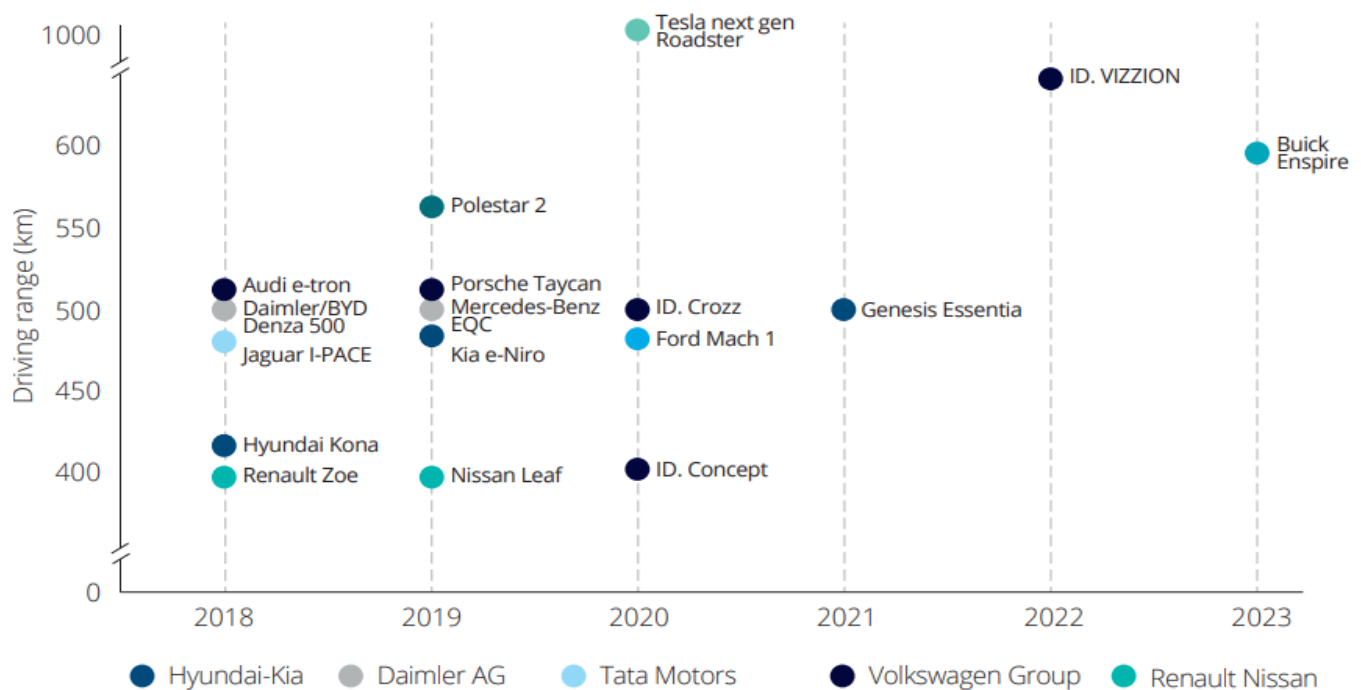


Figure 1: The driving range of next-generation vehicles; Source: (Deloitte, 2019)

The threat of new entrants

The threat of new entrants is high, as many newcomers have joined the race of the electric vehicle industry. New Entrants China, New Entrants ROW, Tesla, BYD, Geely and Toyota are the OEMs (original equipment manufacturers) that have set out plans for switching to the Electric vehicle manufacturing industry. Hence, the threat of new entrants is very high in the industry.

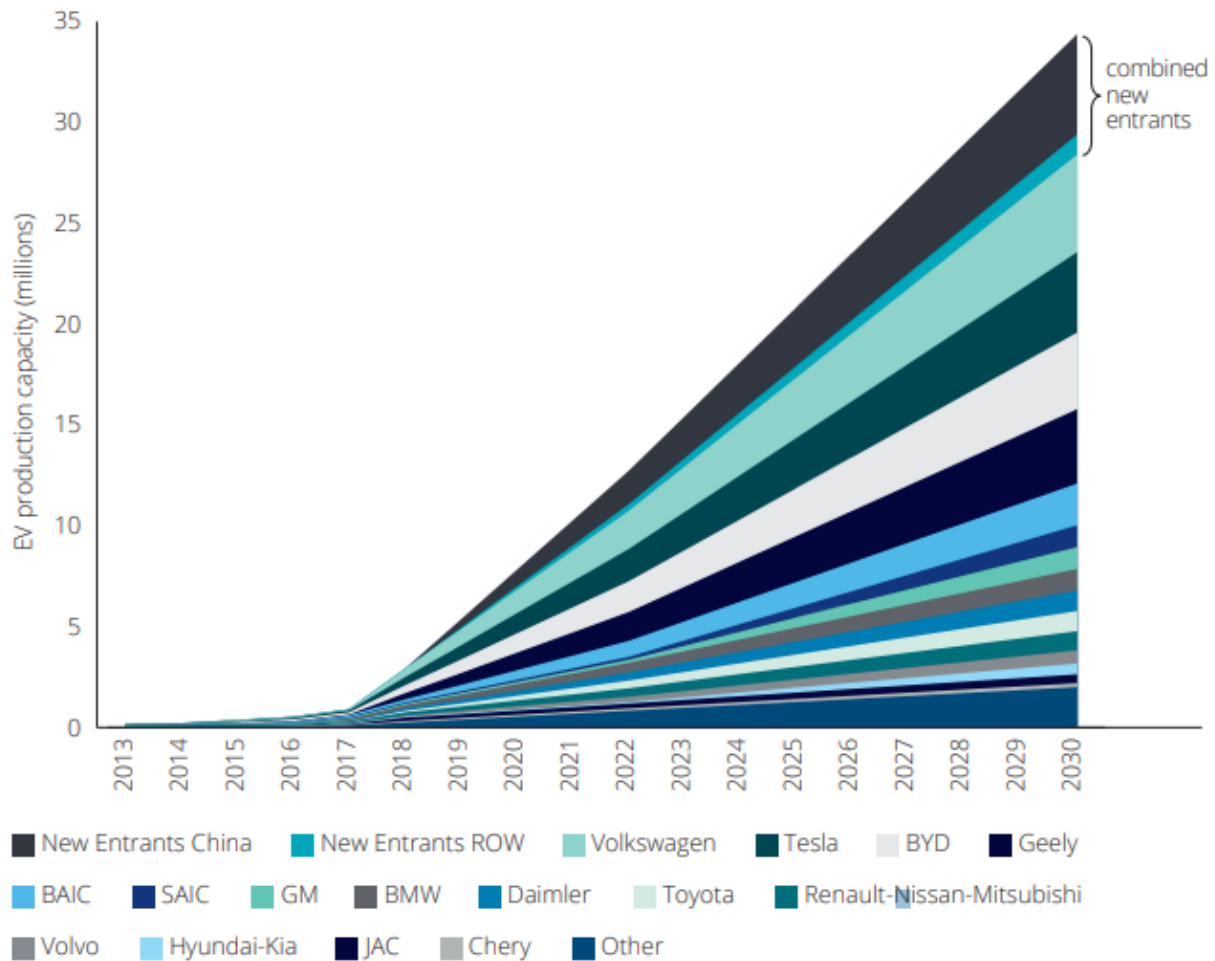


Figure 2: New entrants in the electric vehicle production industry; Source: (Deloitte, 2019)

Competitive rivalry

The electric vehicle industry is facing high competition from new entrants of OEM and the existing manufacturers of EVs. However, the competitive rivalry is higher from the new entrants of OEM. The competition that the industry is facing is higher from the less popular Chinese EV manufacturers (Deloitte, 2019). The competition in the EV market is expected to grow as an expectation gap is emerging between the manufacturer and the demand of customers. The high demand of customers has also increased competition among electric vehicle manufacturers to quench the rising demand as fast as they can. The competition within the EV manufacturers also lies in delivering the latest car technology. It is expected that the competition will follow the same pattern as found in the case of ICE vehicles.

The ICE vehicle manufacturers used to compete to provide the latest design and suitable mileage and acceleration for grabbing consumer attention. Here the competition will be in providing the latest EV technology incorporated in cars such that they give a greener future in the automotive industry.

Threat of substitutes

The threat of substitutes is low in the electric vehicles industry because EVs are itself alternatives of ICE driven vehicles. However, considering the case of battery-powered electric vehicles, there have been found alternatives or substitutes such as plug-in electric vehicles and fuel cell electric vehicles (Amsterdam Round Table Foundation et al., 2014). In the hybrid EVs, there lies a plugin system to recharge batteries and in the fuel cell ones, vehicles drive with electric motor technology only and the energy is stored in hydrogen cells.

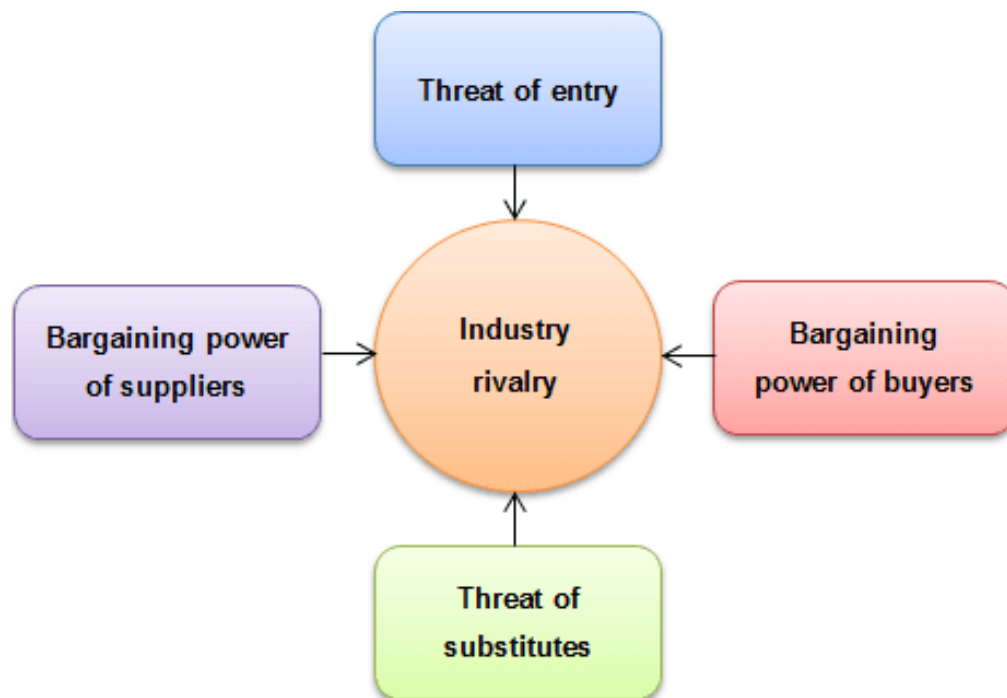


Figure 3: Porter's five forces; Source: (Rothaermel, 2015)

Attractiveness of the industry

The industry is attractive due to the high demand among customers towards EV usage. Though the bargaining power of suppliers, customers, and competitive rivalry is high, the industry is considered to be attractive, as people are moving towards a sustainable automotive technology which can only be achieved through electrification of vehicles.

3. Organisational Changes

The organisation change defines an immediate deviation from the existing trend to get in touch with the ongoing market trends (Harmon, 2019). Here, the changes in Volvo cars, for example, are meant towards the electrification of their existing car manufacturing. Volvo has signed a billion-dollar electric battery deal with two Asian electric battery manufacturers such as Contemporary Amperex Technology (CATL) and South Korean Chemical Group (LG Chem) (Campbell, 2019). However, the industry does have a high threat of new entrants and extensive competitive rivalry which is expected to trouble Volvo to some extent to firm its position in the EV industry.

4. Reasons for the organisational changes

The reason behind the organisation change is the high demand of customers for EVs (Lucas et al., 2018). The change is expected to grow competitive advantage, as it is a growing trend among Europeans. Going with the market trend is a preliminary reason for organisational change (Doppelt, 2017). For example, Volvo has adopted the change for growing market share and increasing existing revenue. The growing market share and increase of revenue are both affirmative drivers of any organisational change (Harmon, 2019). Since EV is of high demand, Volvo has gone for the change for increasing its existing sales record.

5. Conclusion

The electric vehicle industry is attractive, as it is trendiest among all the World. The competition is high in the industry as multiple OEMs have grabbed the sector with the electrification of their existing automation products. Starting from Tesla, multiple companies such as Hyundai, Toyota and many more have introduced a section of electric vehicles apart from keeping the range of ICE ones. Similarly, Volvo has also stepped into the industry and has signed deals with Asian manufacturers of electric batteries to be incorporated in the EVs.

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