
ELECTRIC VEHICLES IN EUROPE

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Contents

Introduction.....	2
PART A.....	2
Major Forces Shaping the European car manufacturing Industry: PESTEL Analysis..	2
<i>Political factors.....</i>	<i>2</i>
<i>Economic factor.....</i>	<i>2</i>
<i>Social factors.....</i>	<i>3</i>
<i>Technological factors.....</i>	<i>3</i>
<i>Environmental factors.....</i>	<i>3</i>
<i>Legal factors.....</i>	<i>4</i>
An analysis of the Organizational Changes in the EV Industry.....	4
<i>The threat of new entrants.....</i>	<i>4</i>
<i>Consumers' bargaining power.....</i>	<i>5</i>
<i>Rivalry among existing firms.....</i>	<i>5</i>
<i>The threat of substitute products.....</i>	<i>5</i>
<i>Bargaining power of suppliers.....</i>	<i>5</i>
PART B.....	6
New and emerging business opportunities in the EV industry.....	6
<i>EV charging stations.....</i>	<i>6</i>
<i>Battery disposal and replacement services.....</i>	<i>6</i>
<i>EV servicing garage and training services.....</i>	<i>6</i>
<i>Spare parts production and selling.....</i>	<i>6</i>
Businesses likely to be Adversely Affected by the Adoption of EVs.....	6
<i>Fossil-fuel producers.....</i>	<i>6</i>
<i>Auto parts and maintenance business.....</i>	<i>6</i>
Conclusion.....	7
References.....	8

Introduction

The adoption of Electric Vehicles (EVs) in Europe remains in its initial stages. For the last few years, the European EV industry has faced a turbulent period of promises coupled with disappointments as evidenced by the EV sales figures below 1% of the global EV sales (Amsterdam Roundtable Foundation, McKinsey & Company, 2014, p.9). However, this phenomenon is likely to change going into the future as evidenced by changes such as replacing internal combustion engine (ICE) with electric motor by major car manufacturing firms in Europe such as Volvo (Amsterdam Roundtable Foundation, McKinsey & Company, 2014, p.9). Such changes can be explained using business models like the Porter Five forces and the PESTEL (Yan, 2018, p.55). In section A of this paper, the author utilises these business models to analyse the EV industry in Europe to understand the significant forces shaping it and the car manufacturing industry as a whole. Organisational changes likely to take place in the future are also analysed in this section. Section B of this paper identifies new and emerging business opportunities the EV industry is likely to present to entrepreneurs. Finally, this section looks at businesses likely to be affected by the adoption of electric vehicles in the long-run.

PART A

Major Forces Shaping the European car manufacturing Industry: PESTEL Analysis

The car industry is a major economic cornerstone in Europe. PESTEL analysis, which is an acronym representing political, economic, social, technological, environmental, and legal factors can be used to show how the European automobile industry has evolved and where it is headed (Biresselioglu, Kaplan & Yilmaz, 2018, p.5). The following discussion is an overview of these factors.

Political factors

In Europe, most governments have employed proactive initiatives in recent years, especially from post2008 financial crisis. In particular, there have been various government initiatives employed that favour the manufacturing of EVs across Europe (Yan, 2018, p.56). The initiatives have been both on the supply and demand side. For instance, the majority of governments in Europe have invested in EV mobility and infrastructural programs to encourage boost supply (Encarnação et al., 2018, p.26). Some of these infrastructures include the establishment of special parking spots and charging stations for EVs (Kester et al., 2018, p.722). An example includes the installation of approximately 165 fast chargers across Estonia and this has ensured that every city with a population of 5,000 residents has at least one EV charging station (Amsterdam Roundtable Foundation, McKinsey & Company, 2014, p.13).

Economic factors

The European EV industry is among the most affected by financial and economic crises. Following the 2008 economic crisis, there was a collapse in business confidence, and this led to shrinking in employment and reduced consumer spending (Biresselioglu, Kaplan & Yilmaz, 2018, p.5). Also, there was a tightened credit by the banking sector, which led to increased rejection of vehicle financing from financial institutions (Sierzchula et al., 2014, p.186). Such an economic phenomenon adversely affected the whole automotive supply chain. As a consequence, the European automobile industry lost approximately 20% of production and revenue (Rezvani, Jansson & Bodin, 2015, p.124). To counter these financial and economic challenges, several European governments including the UK, France, Netherlands, Denmark, and Norway are already offering incentives to consumers opting for EVs (Amsterdam Roundtable Foundation, McKinsey & Company, 2014, p.15). More

specifically, Norway is leading in this initiative where it is offering a wide package of subsidies which amount to £17,000 for consumers who buy EVs (Amsterdam Roundtable Foundation, McKinsey & Company, 2014, p.9). Also, the UK refunds back to buyers premiums of between GBP 4000 and 7000 for the purchases of vehicles which emit less than 75g/km.

Another economic factor favouring the adoption of EVs in Europe is the provision of tax breaks. In particular, some European governments have stepped in to make EVs more attractive options to consumers by incentivising lease, purchase, and road taxes (Zhang et al., 2014). For example, the income tax addition for a complete EV lease was 4% compared to 14% to 20% for ICE vehicles in 2014 (Rezvani, Jansson & Bodin, 2015, p.124). Other financial incentives offered to EV consumers include toll fee waivers. For instance, EV owners in Paris enjoy reduced parking and toll fees whereas, in Oslo, EV owners are allowed to drive in taxi and bus lanes (Bjerkan, Nørbech & Nordtømme, 2016, p.171). All these incentives are meant to stimulate demand for EVs.

Social factors

Some of the social factors affecting the European EV industry include demographics and culture, as evidenced by the consumers' capacity and purchasing patterns. The main market being targeted by EV manufacturers has been experiencing changes in consumer buying patterns and preferences, particularly due to recession (Zubaryeva et al., 2012). In other markets, consumers' preferences have shifted towards high fuel efficiency, increased awareness of harmful emissions which are harmful to the environment.

Technological factors

There has been increased consumer awareness in the European automobile industry in recent years, and this has contributed to increased technological innovations. For instance, EV manufacturing is rapidly becoming popular following harmful emissions from oil-powered vehicles (Broadbent, Drozdowski & Metternicht, 2018). The technology employed in the production of EVs is considerably high and is the main contributor to the high cost of electric-powered cars (Neves, Marques & Fuinhas, 2019, p.30). However, some governments in Europe have begun committing funds to the research and development programs related to EVs (Encarnação et al., 2018, p.26). Such programs are aimed to lessen the cost of producing EVs, and this will ultimately make them affordable to consumers.

Environmental factors

There has been increased awareness of greenhouse and global warming effects which affect European car manufacturing industry. Moreover, consumers are demanding fuel-cells and hybrid cars, which are more environmentally friendly compared to ICE cars (Encarnação et al., 2018, p.27). The strict regulation aimed to reduce environmental pollution is also affecting the car industry. For instance, the reduction of CO₂ emissions is the key focus of European policymakers. Most specifically, the European Union targets to reduce emissions to 95g CO₂/km by 2020 and 68-78g CO₂/km by 2025 (Amsterdam Roundtable Foundation, McKinsey & Company, 2014, p.22). Therefore, this means that environmental regulations are likely to tighten going into the future. Such regulations explicitly support the adoption of EVs as they offer a clean fuel alternative in the European region (Biresselioglu, Kaplan & Yilmaz, 2018, p.6). Moreover, several mobility programs have been started in European countries to address congestion and environmental challenges. For instance, Amsterdam is at the forefront to ensure that parking permits for EVs are available citywide.

Legal factors

Laws and statutes also affect the performance and profitability of EV manufacturing firms in Europe. Since EVs are targeting international markets, they are subject to regulations related to product quality and safety (Kester et al., 2018, p.724). With pollution laws becoming stricter in the European Union, the EVs are at a better position compared to ICE vehicles, which emit high levels of CO₂ into the environment (Yan, 2018, p.55). Moreover, the growing sales of EVs by various firms in the European Union prove the presence of a favourable legal environment being provided for their production (Amsterdam Roundtable Foundation, McKinsey & Company, 2014, p.35). For example, Norway's EV sales moved beyond the region's 1% margin to 6.2% in 2013, while the Netherlands registered 4% sales in the same year.

However, some countries have laws likely to impact on the adoption of EVs negatively. For example, the US has passed laws which either forbid or restrict EV makers from directly selling their vehicles to consumers (Neves, Marques & Fuinhas, 2019, p.33). Instead, the EV manufacturers are supposed to sell their cars through legalised dealers, and this may present strategic management challenges to European EV industry.

An analysis of the Organizational Changes in the EV Industry

There are different forces driving changes in the production of EVs in Europe. Such changes can be described using the Porters five forces business model (Neves, Marques & Fuinhas, 2019, p.35). Michael Porter developed Porter's five forces model and constitute five forces that are believed to shape the overall competitiveness of an industry. The author uses the five factors to analyse the competitive environment of the European EV industry, as discussed below.

The threat of new entrants

The threat of new entrants into the EV manufacturing industry is moderate. The main constraint faced in the EV industry is the compromise or balance that has to be made between their cost and performance (Neves, Marques & Fuinhas, 2019, p.36). On the one hand, the majority of automobile manufacturers in Europe including Toyota, Ford, BMW, and General Motors have developed EVs that are considerably expensive though their performances are compromised (Encarnação et al., 2018, p.29). More specifically, EVs have been known to have a slow speed compared to conventional cars due to their low battery life. On the other hand, other EV manufacturers such as Tesla have developed superior brands including Model 3 Model X, and Model S which boast of advanced technical features including high speed, and prolonged mileage after the initial charging (Neves, Marques & Fuinhas, 2019, p.37). Nevertheless, such entirely electric advanced cars are expensive to manufacture. As a consequence, the profitability of EV companies in Europe remains low to date. Therefore, potential new entrants are likely to face similar challenges experienced by existing players in the EV industry (Broadbent, Drozdowski & Metternicht, 2018). It is also worth to note that established players in the EV industry are benefiting from economies of scale, and this may not apply to new entrants (Broadbent, Drozdowski & Metternicht, 2018). Also, investing in the EV industry is a capital-intensive venture, and this may be a barrier for new entrants into the market.

Consumers' bargaining power

The buyers' bargaining power in the EV industry is significant. There exist no costs for buyers if they choose to switch from one EV model to the other, and this considerably increases consumers' bargaining power. However, price sensitivity may affect consumers' bargaining power (Broadbent, Drozdowski & Metternicht, 2018). For example, there is a wide range of EV brands from different established car manufacturers as well as brands from new firms. Finally, consumers' bargaining power in the EV industry is affected by their ability to opt for substitute products or services alongside the degree of differentiation among the industrial players (Zubaryeva et al., 2012). Therefore, customers can opt for less expensive EVs, and this may make expensive brands to reconsider their pricing strategies.

Rivalry among existing firms

The rivalry existing among EV firms can be described to be highly intensive. Highly competitive markets are usually associated with low returns due to the high cost of the competition. Though some EV manufacturers are recognised more than others, the majority of automobile firms in Europe have plans to expand their focus into this segment (Al-Alawi & Bradley, 2013, p.197). For instance, Volkswagen, Mercedes-Benz, Nissan, Jaguar, and BMW have all expressed interests to venture into large-scale production of EVs (Al-Alawi & Bradley, 2013, p.199). The presence of t large firms in the EV industry also makes the market to have oligopolistic characteristics. An oligopolistic market has few sellers such that the actions one will affect the market price (Seixas et al., 2015, p.169). Such a market scenario helps in reducing the impacts of price-based rivalry.

The threat of substitute products

The threat of substitutes in the EV industry remains moderately high since the switching costs are low. The low switching costs mean that consumers can opt for other transport means such as traditional oil-powered vehicles or public transport and this may adversely affect the uptake of EVs (Rezvani, Jansson & Bodin, 2015, p.127). However, since the substitutes such as public transport have low versatility and flexibility, their threats remain a secondary management concern in the EV industry (Motoring research 2017).

Bargaining power of suppliers

The EV supply chain in Europe is quite fragmented, as there are several suppliers. For the EV firms to manufacture their products, they require different raw materials which are sourced from several suppliers (Motoring research 2017). Therefore, the size of these suppliers is large is significantly large to the extent that it influences the price of the vehicle.

PART B

New and emerging business opportunities in the EV industry

The growing adoption of EVs in Europe presents various business opportunities with high-profit potentials for business executives and entrepreneurs. According to a report by Bloomberg New Energy Finance, it is estimated that EVs will be among the leading automobile sales by 2040 accounting for 33% of all light-duty cars (Biresselioglu, Kaplan & Yilmaz, 2018, p.9). Such opportunities may be found in the areas of maintenance, supporting infrastructure, and raw materials. Some of these emerging opportunities are discussed below.

EV charging stations

The availability EV charging stations are likely to be a major determinant of the adoption rate of EVs in the future. The installation of EV charging stations is expected to exceed 12.7 million by 2020 (Biresselioglu, Kaplan & Yilmaz, 2018, p.10). As long as the adoption of EVs continues to grow, the demand for charging stations is also likely to grow (Yan, 2018, p.59). As such, this is a major business that opportunity entrepreneurs can tap going into the future.

Battery disposal and replacement services

The rise in the adoption of EVs is likely to create an environmental problem. Since the current EV battery technology is similar to that of smartphone battery (lithium battery), there is need to have a proper disposal mechanism due to the danger posed by Lithium to the environment (Kester et al., 2018, p.728). Upon the expiry of EV batteries, there will need to replace with new ones while the old ones are disposed of. Disposing and replacing these batteries will require specialized services, thus, presenting a business opportunity to entrepreneurs.

EV servicing garage and training services

The servicing of EVs is completely different from ICE vehicles. For instance, servicing EVs requires the repair of inverters and motors and these present a business opportunity for entrepreneurs (Encarnação et al., 2018, p.31). It is also worth noting that the repair and maintenance of EVs require different skills from ICE vehicles (Encarnação et al., 2018, p.32). Therefore, setting up training centres along with garage service will be a lucrative business.

Spare parts production and selling

Manufacturing and selling of EV spare parts are likely to be a booming business opportunity in the future (Neves, Marques & Fuinhas, 2019, p.38). The spare parts can be imported from original manufactures which can then be retailed.

Businesses likely to be Adversely Affected by the Adoption of EVs

The adoption of EVs is likely to affect various businesses, as discussed below, negatively.

Fossil-fuel producers

An increase in the adoption of EVs will negatively affect the oil producers as this will lead to reduced demand for some petroleum product. In particular, the oil-producing and exporting businesses are likely to a reduction in prices, and this will contribute to reduced profit margins (Neves, Marques & Fuinhas, 2019, p.37). However, it is worth noting that EVs still use other oil products such as grease for lubrication purposes.

Auto parts and maintenance business

The companies specializing in the production of ICE auto spares are likely to be negatively affected following the widespread adoption of EVs. ICE vehicles often require high

maintenance compared to EVs (Broadbent, Drozdowski & Metternicht, 2018). Therefore, the adoption of EVs will hurt the auto parts and maintenance businesses.

Conclusion

The EV technology is offering a promising alternative of green transportation. Since the market penetration of EVs is still at its initial stage, it is difficult to project its future with certainty. However, the current developments indicate the presence of a significant potential of the industry to grow in the future. From the analysis of the European EV industry in this paper, it is evident EV technology is likely to disrupt the market trends hence, the need for the major players to understand the major drivers and business opportunities associated with this technology.

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