



**Environmental Analysis of an
industry – Assessment 2**
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The Global Business Environment

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1. Introduction

The purpose of this report is to evaluate the evolution of electric cars as an important contribution to the Volkswagen (VW) portfolio.

Vehicle engines have been dominated by internal combustion (IC) technology since the 1980s. Over the years, car manufacturers have invested to increase fuel economy. In the 1990s, electric motors re-emerged as alternative technologies. Electric vehicles (EVs) use an electric motor instead of an internal combustion engine that runs on gasoline or diesel (Dijk and Yarime, 2010). The EV has a traction battery pack to power the engine. A hybrid electric vehicle, on the other hand, uses a mix of electric and combustion engines to provide users with more options. In the new millennium, sales of electric cars continue to grow. For example, in 2013, there were less than 1 million electric vehicles in the world. In 2019, it was 7.2 million (Vitra Global, 2020).

China remains the largest EV market in the world. In European countries, including Norway, Iceland and the Netherlands, the proportion of electric cars continues to grow as opposed to traditional combustion vehicles (Vitra Global, 2020). Given the size of the industry and its recent evolution, this report assesses the challenges and successes of Volkswagen in its efforts to introduce and maintain an electric vehicle portfolio.

2. Case Study Focus

In 2016, VW faced a severe loss of brand reputation due to an exhaust gas scandal (Nemeth and Carvalho, 2017). The scandal had a negative impact on the market share of the organization. During this period, the organization was also found to be far behind the EV market compared to its competitors. For example, the first fully electric VW car was launched in 2014, while competitors overtook it: Nissan had the Leaf model already in 2010 (Hutton, 2014) and Tesla launched the Model S in 2008. VW has since invested heavily in the development of electric vehicles. Winton (2020) stated that VW became the first global car manufacturer to profit from its battery-only electric vehicle (BEV), with expected profits in 2022. Therefore, VW has recently made changes to implement such a change.

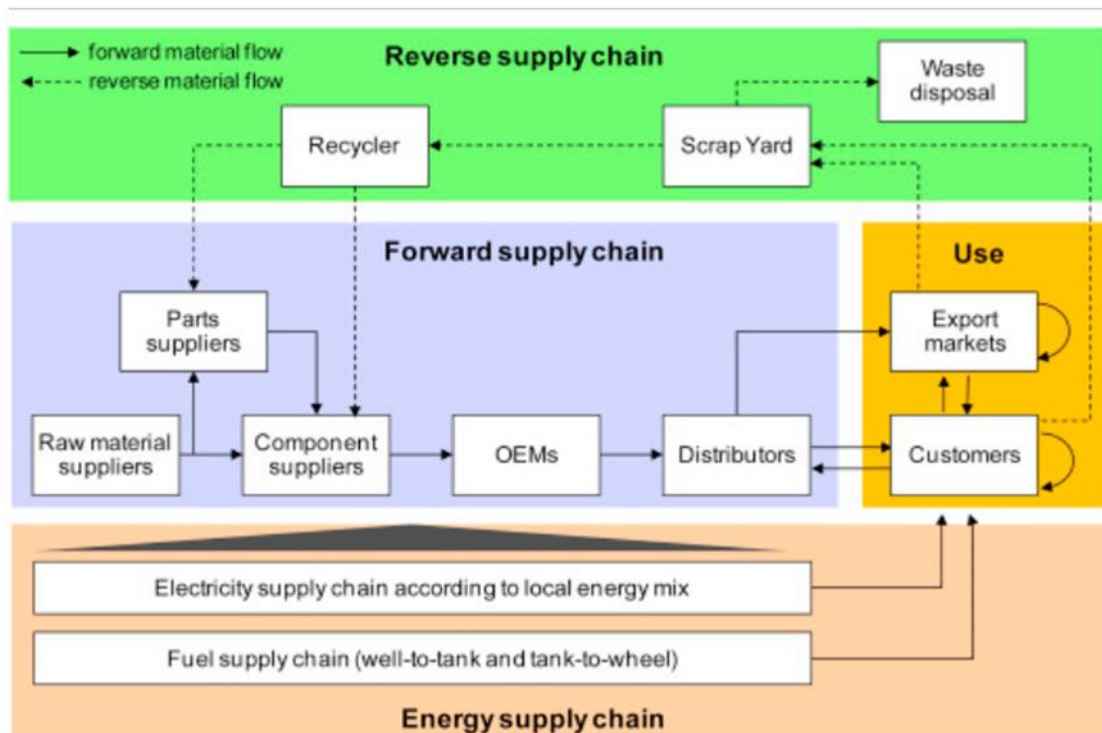
3. Porter's Value Chain Analysis

Porter's value chain aims to explore the underlying systems and activities of an organization within a specific industry (Simatupang et al., 2017). Core activities need to be explored (inbound logistics, operations, outbound logistics, marketing and services) as well as supporting activities (company infrastructure, human capital, technology and purchasing activities).

Primary Activity Evaluation

Figure 1 below shows the key structure of the automotive supply chain (Gunther et al., 2015).

Figure 1: Automotive Industry Value Chain



Source: Gunther et al. (2015, p. 222).

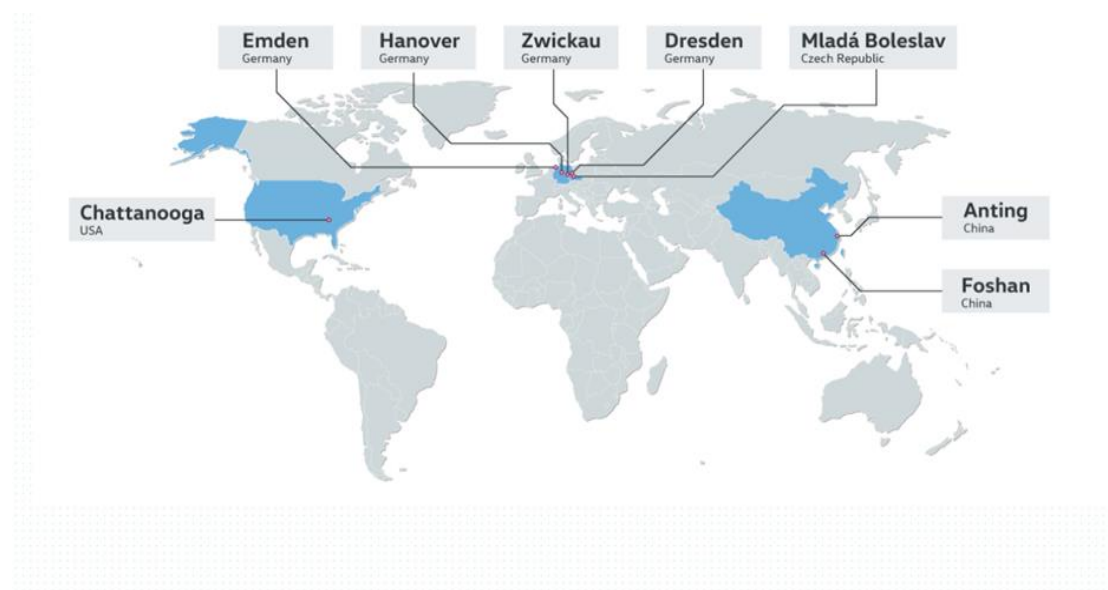
Inbound logistics: In the context of the electric vehicle industry, the management of inbound logistics would include the identification of the appropriate raw material supplier and component suppliers who directly supply the manufacturer (here Volkswagen).

At VW, inbound logistics involves the integration of return logistics (i.e. recycled parts) into the future supply chain. VW has over 5,000 suppliers and logistics partners. To improve the efficiency of inbound logistics management, VW has automated shipping processes to handle the volume of transport. This automation occurs in specific segments or product portfolios (Osterreichische Verkehrszeitung, 2017).

VW also uses just-in-time technology to manage incoming deliveries to ensure there are no delays or additional materials waiting for production (Business CG, 2019)

Operations: VW expanded its production activities related to the production of electric cars. The increase in production capacity is intended to improve the global availability of electric vehicles. The organization produces in China, the USA and Europe. VW, in particular, intends to invest \$ 800 million by 2022 at its Chattanooga, Detroit site, to expand its capabilities. As you can see in Figure 2 below, VW aims to manufacture at eight locations in the US, Germany, Czech Republic and China to meet global demand. (Volkswagen Newsroom, 2019a)

Figure 2: Volkswagen Production Sites



Source: Volkswagen Newsroom (2019a)

Volkswagen Newsroom (2019b) also reported that operational efficiency is achieved by focusing on specific improvements in terms of charging and electricity consumption.

Outbound logistics: VW has a complex distribution network that helps connect production and delivery locations. VW's nine electric car production plants are linked by a network of logistics suppliers to the different countries where there is a demand. The 2019 annual report indicates that the largest increases were recorded in China and Europe. Therefore, the production units in China, the Czech Republic and Germany are the most interconnected production sites. Strategic alliances with distributors helped create a suitable outbound logistics platform (Csizmazia, 2014).

Marketing: VW has also invested heavily in engaging with social media. Following the emissions scandal, social media has become an important tool for brand communication with customers. The organization launched an international e-mobility campaign using a set of product teasers, consumer awareness and customer interaction elements (Volkswagen Newsroom, 2019c). As part of its marketing strategy, the organization also launched e-commerce sales. This means that the dealer takes over the role of the agent and receives a commission from VW for the service. The consumer can purchase directly from VW and the local dealer remains their local contact person for after-sales services (ET Auto, 2020). The Volkswagen ID.3 is set to be the first electric car for the masses, with prices starting below 30,000 euros (O'Kane, 2019). VW uses its marketing strategy to communicate with customers.

After-sales service: VW saw the need to provide its customers with easy access to services and charging portals. Research studies have shown that the demand for electric cars is fueling customer concerns about the lack of coverage and charging stations (Deloitte, 2011). Volkswagen (2020) has made this part of its e-mobility strategy and has invested in developing other business segments that can help solve this customer challenge. The organization recently established a subsidiary ELI with the role of improving charging infrastructure across Europe and identifying opportunities for renewable energy charging points. ELI has the We Charge brand which identifies strategic charging locations across Europe. The organization is also investing in reducing the size of the charging box to make charging at home easy. By 2025, We Charge will create 36,000 charging points at various locations in Europe (Volkswagen, 2020).

Secondary Activities

Procurement: An important purchasing activity to evaluate is battery access. The choice of battery and its location can be a key determinant of competitive advantage for companies. (McKinsey, 2014) The EV production supply chain requires access to specific metals, including lithium, nickel and manganese. Therefore, the company has defined specific supplier criteria with regard to maintaining its sustainability index needs. (Volkswagen, 2019). VW

intends to form joint ventures to help finance battery production to battery suppliers to cope with the pressure to mass-produce electric vehicles. VW is expected to need 300 gigawatt hours of battery capacity in Europe and Asia (Reuters, 2019). Therefore, by creating strategic alliances, it hopes to have moderate access to a network of suppliers for battery production.

Human resource management: Talent management will evolve as an important challenge as the electric vehicle market for VW grows. As e-commerce opportunities increase (ET Auto, 2020) and the number of interested consumers for information on the range of batteries as well as charging networks, VW will need its dealers to have trained sellers to meet this changing consumer. Global governments acknowledge that there is a skill gap in electric vehicles. The Croner-i report (2016) indicated that there is a serious skill gap in the UK car industry in relation to the growth of the electric vehicle market. The skills gap occurs upstream and downstream along the entire value chain. VW has a restructuring program in place where administrative staff are replaced by more talented R&D employees (Dobush, 2019).

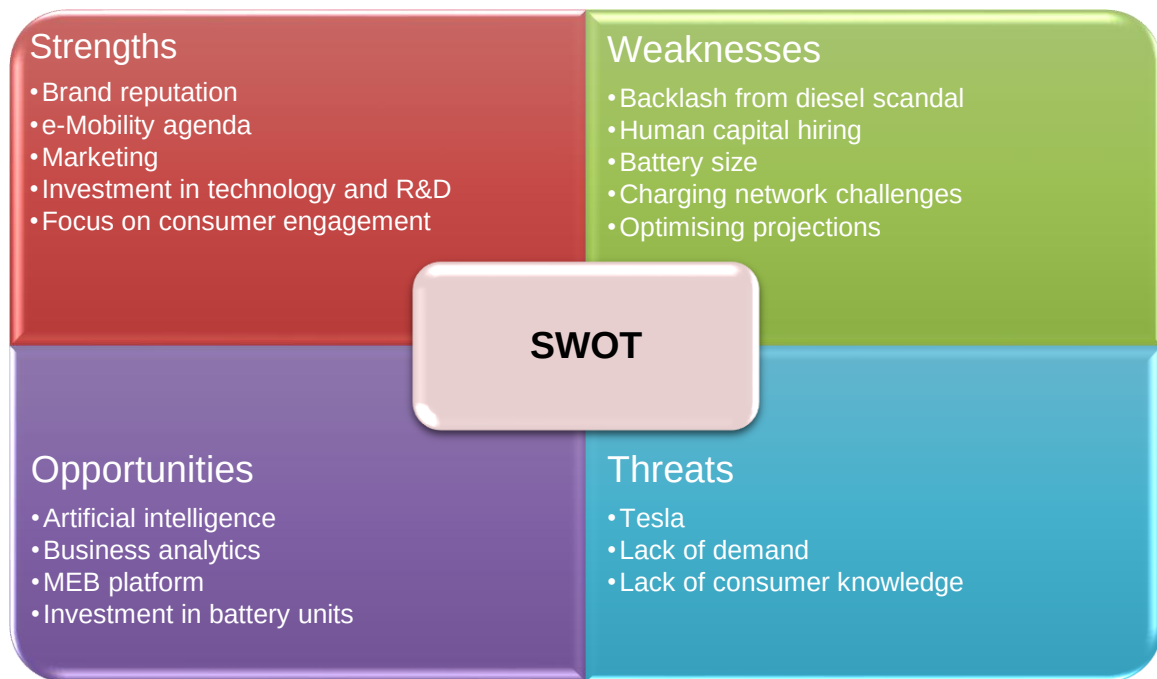
Technology development and infrastructure development: Most car manufacturers invest in inductive charging and wired charging stations that can both increase charging speed and extend range. (McKinsey, 2014). For example, the organization was the first in Europe to launch a Modular Electric Drive Array (MEB) (Volkswagen, 2020). The goal of such a common platform is to create better integration in supply. MEB is designed to optimally match the various components in the car. For example, the electric motor is integrated into the rear axle along with the power electronics and transmission for more space. An investment of EUR 33 billion in research and development of electric car infrastructure aims to develop these technologies (Volkswagen, 2020).

VW intends to increase the infrastructure capacity for electric vehicles. For example, in Europe, the plant in Zwickau will produce up to 330,000. Electric vehicles per year, making it the largest and most efficient electric vehicle factory in the region (Volkswagen Newsroom, 2019a). The increase in demand for electric cars has created an urgent need for carmakers to increase their production capacity and R&D investment. This evidence shows that VW has made significant investments in both. (Shankleman, 2017)

4. SWOT Analysis and recommendation

This section aims to assess the performance of the electric car value chain and to identify the inherent challenges that may arise. For this purpose, a SWOT analysis was used to identify key strengths, weaknesses, opportunities and threats.

Figure 3: SWOT Analysis



Source: SWOT & Pestle.com (2020)

The main strength, as identified by the value chain analysis, is the independent assessment of infrastructure, operations and technology development needs. (Laurischkat et al., 2016). VW saw the need to change its business model. There is a greater dependence on strategic alliances with the right suppliers. VW realized it would require significant battery capacity and has formed an alliance with its battery suppliers to facilitate financing. By creating such an alliance, the company was able to increase supplier engagement and brand engagement.

Another important advantage is the right marketing program. VW's e-mobility campaign demonstrates its growing commitment to the sustainability agenda that is important in the aftermath of the Dieselgate. As shown in Figure 3, VW has improved its brand reputation by showing its commitment to a specific EV production program.

Finally, VW's investments in technology, especially in MEB development, are aimed at creating a competitive advantage. VW offers this technology platform to other car makers with the aim of creating open networks of innovation and cost leadership. The matrix ensures the ease of interaction between different models and manufacturers and can help with ease of automation (Volkswagen, 2019).

Weaknesses

VW has to face some challenges. For example, Halvorson (2020) has argued that VW's growth strategy in the electric vehicle market is in line with the needs of the Chinese market. There are concerns that VW's goals cannot be met as it would have to capture 53 percent of the global EV market. Another weakness is the constant challenges faced by all car makers, including battery size and charging delays (McKinsey, 2014). Lack of standardization with regard to vehicle charging stations may further hinder consumer preferences for VW EV vehicles.

Opportunities and Threats

Key opportunities for VW in this industry include the development of artificial intelligence. (Hoffmann, 2018). Platforms such as MEB are also expected to forge alliances between different car manufacturers to meet sustainability programs (Radu, 2020). VW has invested heavily in the development of its own batteries. The organization plans to develop its own battery cell factories that can help reduce the company's dependence on external suppliers.

The main threats to VW include challenges from pureplay electric car sellers such as Tesla. Tesla has a unique business model in which there is direct consumer engagement and involvement (Ingram, 2018). The VW ecosystem works in a different way, which may cause difficulties in meeting specific consumer needs. The impact of Covid-19 on the global automotive sector is also intended to create serious challenges for the sector (BCG, 2020).

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