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APPLICATION OF SUSTAINABLE DEVELOPMENT CONCEPT AS A FACTOR OF INTERNATIONAL COMPETITIVENESS

APPLICATION OF SUSTAINABLE DEVELOPMENT CONCEPT AS A FACTOR OF INTERNATIONAL
COMPETITIVENESS

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LALL, S. 2001. Competitiveness, Technology and Skills. Cheltenham: Edward Elgar Publishing. ISBN: 978 1 84064 586 6.

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ABSTRACT

This Master's thesis focuses on the application of the sustainable development concept in the company Volkswagen Slovakia to enhance its competitiveness. The automotive company is analysed as a player in the sustainable mobility industry and its current strategy is evaluated in sense of sustainability. Based on the most relevant aspects of the analytical part, several recommendations are suggested that should boost the firm's operations in the area of electric vehicles production and mobility service providing and which should contribute to achieving the eco-advantage in the industry.

ABSTRAKT

Tato diplomová práce se zaměřuje na aplikaci koncepce udržitelného rozvoje ve firmě Volkswagen Slovakia na posílení její konkurenceschopnosti. Automobilová společnost je analyzována jako hráč v odvětví udržitelné mobility a její současná strategie je zhodnocena v zmyslu udržitelnosti. Na základě nejrelevantnějších aspektů analytické části je navržena řada doporučení, které by měli podpořit působení firmy v oblasti výroby elektrických vozidel a poskytování transportních služeb a které by měli přispět k dosažení eko-konkurenční výhody v daném odvětví.

KEY WORDS

sustainable development, competitiveness, value, sustainable mobility, electric vehicles, eco-efficiency

KLÍČOVÁ SLOVA

udržitelný rozvoj, konkurenceschopnost, hodnota, udržitelná mobilita, elektrická vozidla, ekologická efektivnost

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Brno, 17 July 2017

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Bc. Lucia Kolmosová

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INTRODUCTION

Our planet has been recently facing an enormous ecologic challenge represented by an increasing impact of environmental threats such as climate change or disrupted biodiversity. This invokes a question how long the world can carry such a burden. It is urgent to come up with new solutions, which would lead our society towards sustainability. It is important to change the way of satisfying current needs without endangering the satisfaction of future needs, which also corresponds with the basic characteristic of sustainability. However, this cannot be achieved without a participation of companies. They have a crucial role to reshape present systems and values and trigger the sustainable revolution.

The main focus of this master's thesis is how companies can utilize the current trend of sustainability in their favour and build a competitive advantage upon this concept. This will be particularly applied on the company Volkswagen Slovakia and its power plant in Bratislava. Taking into account the recent crisis followed by several major changes within Volkswagen Group, this topic is at the moment very relevant for the given company. Therefore, the main goal of the thesis is to propose strategic measures of Volkswagen Slovakia within the sustainable development concept contributing to strengthening of the company's competitiveness not only within the Slovak market, but also internationally.

The thesis is divided into three main sections beginning with the literature review creating a theoretical background for the further elaboration of the thesis with an adequate academic underpinning. This chapter explains the basic terms sustainability and competitiveness and indicates how these concepts overlap and can be applied in a company. Secondly, the analytical part evaluates the sustainable mobility industry, competitive environment of the focal company as well as the current strategy of Volkswagen Slovakia with respect to the sustainability concept. This section reveals the actual position of the company on key success factors of the industry, which is the base for recommendations. Given proposals should bring a positive impact on the company's competitiveness.

OBJECTIVES AND METHODOLOGY

Objectives

The focal company of this thesis is Volkswagen Slovakia, a.s., the Slovak subsidiary of the German automotive concern Volkswagen AG. The whole automotive industry has been currently dealing with an increasing significance of sustainability concept, which requires a prompt reaction of car manufacturers to secure their competitiveness.

With respect to this, the main aim of this diploma thesis is to suggest strategic steps of Volkswagen Slovakia within the concept of sustainable development that would contribute to strengthening of the company's competitiveness on the European market. Several partial objectives support the achievement of the main aim:

- to create a theoretical background identifying possible application of the sustainable development concept in a company and how this can affect its competitiveness;
- to analyse the current sustainability strategy of Volkswagen Slovakia and identify areas that can be improved;
- to analyse the competitive environment of the company in terms of the sustainability concept;
- to identify current trends in the industry revealing potential constraints and opportunities for Volkswagen Slovakia within the sustainability concept.

Methodology

The Master's thesis is separated into three main sections beginning with the critical literature review examining established and current academic papers and publications relevant for the purpose of this thesis. The literature review creates the theoretical background for the practical part defining the main terminology and frameworks. The second main section provides the evaluation of the contemporary situation of the chosen

company in the automotive industry with respect to sustainability. The current sustainability strategy of Volkswagen Slovakia is analysed as well as of the main competitor in this field. This section discloses opportunities and constraints effecting the future development of the company's sustainability strategy. The last main section builds upon the previously presented knowledge and its purpose is to suggest sustainability measures Volkswagen could take to improve its environmental impact and simultaneously enhance its competitiveness.

To fulfil the set objectives, apart from general methods such as synthesis, deduction, induction or abstraction, following research methods are used:

- description and evaluation of the theory;
- analysis of the current situation and strategy of the company;
- application of theoretical frameworks in the analysis within the sustainability concept;
- SWOT analysis as a summary of the analytical section;
- unstructured interview with employees of Volkswagen Slovakia

This thesis is based on a combination of primary and secondary sources of data. The first section is conducted using secondary data, in particular hard copies and electronic versions of articles from academic journals or topic-related books. The analytical section combines both the primary and secondary data from journals, books, websites as well as information gained by an unstructured interview, guided tours in Volkswagen plants in Bratislava, Dresden and Wolfsburg and own experience in the company.

LIMITATIONS

The focus of this thesis is put primarily on Volkswagen Slovakia, a. s., however, it is not possible to ignore the fact that it is a part of the group Volkswagen AG. Therefore, several decision-making areas are centralised and dependent on the management in Germany. With respect to this, it is also difficult to reach a competent person who could provide specific kinds of qualitative data that might be relevant for this thesis. Furthermore, the author of this thesis does not possess above-standard technical knowledge and skills that might be useful in some parts of the analysis despite the fact that this thesis examines the problematic of sustainability in automotive industry from the view of strategy. Another obstacle is a limited access to information about other companies in the industry, respectively only publicly available sources are used. Regarding provided recommendations, it is difficult to estimate how large their potential impact can be in terms of territory, however, the Central Europe is in main focus of this thesis.

1 LITERATURE REVIEW

The problematic of a sustainable development has been attracting gradually more attention and its solving has become a necessity. From the business point of view, this is a challenge for companies that try to adapt to changes towards sustainability due to increasing pressure of governments and international organisation as well as customers changing their behaviour. On the other hand instead of adapting, companies can utilize the concept of sustainable development in their favour and build their strategic advantage based on this. To understand how the sustainable development can become a factor of a company's competitiveness, it is necessary at first to explain the basic terms.

1.1 Competitiveness and competitive advantage

A company's competitiveness generally describes the ability of a company to successfully compete in the business environment, which is close to Porter's (1990) perception of competitiveness. However, there is no consensus among academics about its unified definition and indicators that determine the level of a company's ability to compete. For instance, Buckley et al. (1988) see the competitiveness as such a company's performance that leads to generating a long term profit, financial resources covering employees' wages and returns for shareholders. Lall's (2001) approach is based on comparison of a company's performance with benchmarks where competitiveness means achieving higher profitability, sales and market share than competitors. Similarly, Lalinský (2013) measured competitiveness of Slovak companies by their profitability (return on assets), labour productivity, market share, but also export performance, which takes into account the international aspect. Based on the above stated, the competitiveness can be measured by several indicators such as previously mentioned profit, market share, shareholders' return, sales, export share, productivity, etc., that have predominantly the quantitative character.

A company should be aware of various factors that can have a positive or negative impact on its competitiveness. With respect to this, Lalinský (2008) identified the most significant competitiveness factors at three different levels – the firm level, sectoral level and macro-environment level. His survey focused on Slovak companies and therefore some results are specific for the Slovak market, however, the identified factors might be generalised also for other similar countries. The factors at the company level are for example professionalism and quality of management, orientation on cost/ price reduction or appropriate communication technology utilisation. Among sectoral factors there is customer demandingness, availability of skilled managers and competent workforce or nature of competitive advantage. The factors of the macro-environment include EU membership, energy costs or quality of transportation infrastructure.

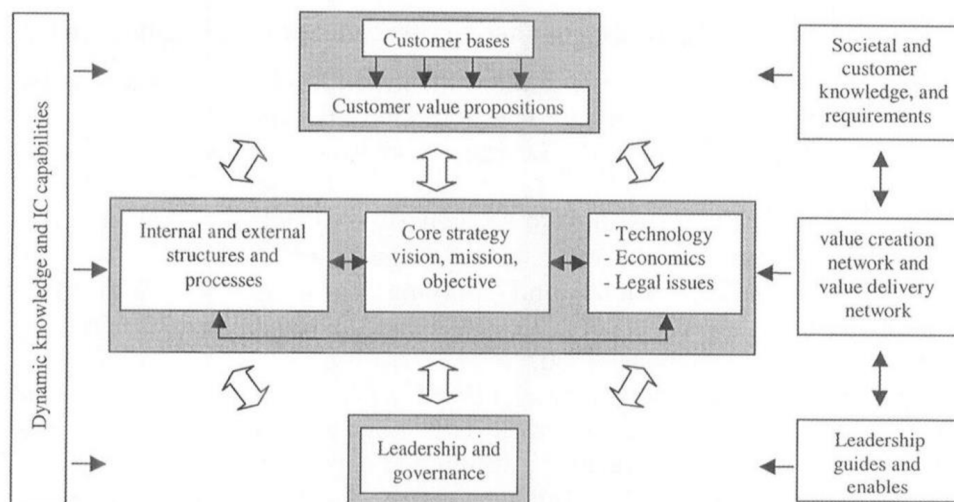
A similar approach can be found when analysing the international competitiveness of multinational enterprises that considers not only factors specific for a company but also factors stemming from the macro-environment specific for a country or region and the industry. This is emphasised in the study of Rugman et al. (2012) that distinguishes between firm specific advantages (FSAs) that are set into a context of country specific advantages (CSAs) together building a company's competitiveness. The CSAs related to a macro-environment can be identified for example through various World Development Indicators of the World Bank or data published in Global Competitiveness Reports of the World Economic Forum (Rugman et al., 2012). Such advantage can be withdrawn from a political, economic, social, technological, legal and also ecological environment (Fozer et al., 2017; Cadle et al., 2010). Some of the industry specific factors can become crucial for determination of key success factors of an industry that are especially important for a company's superb performance in the market. A firm's position on key success factors is directive in terms of its future development (Solberg Søylen, 2012).

As it is stated in the Lalinský's study, the FSAs include managerial skills or capabilities, but also research & development, marketing and financial capabilities. With respect to a changing business environment, intra- and extra-corporational business relationships and networks have been lately gaining their importance as well (Johanson & Vehle, 2011). FSAs should be internal aspects of a specific company fully under its control and if they meet certain conditions they can be considered as a company's

competitive advantage. There are four criteria that can transform a company's core competence into a competitive advantage. This competence has to be (Barney, 1991):

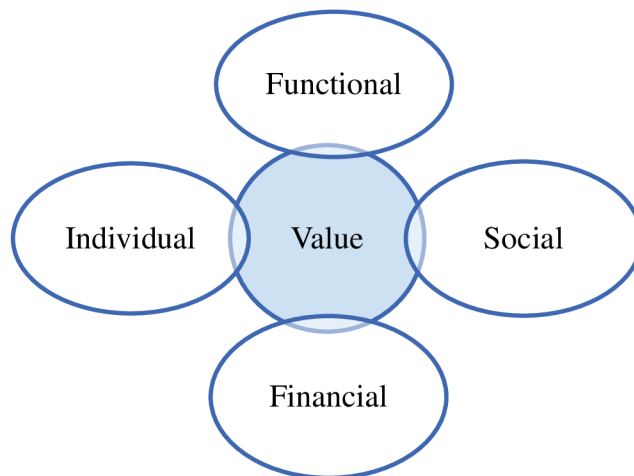
- rare – a company possesses a unique resource;
- valuable – a resource significantly contributes to value creation;
- inimitable – difficult to imitate by competitors;
- difficult to substitute – it is difficult to find an alternative.

From the strategic point of view Mayo & Brown (1999) see the competitiveness as a result of building a competitive business model. Such business model is composed of five elements that are bound to each other. *Sound assessment processes* of a company are the basic assumption for achieving *happy intermediaries* that support a company in many different areas and *happy employees* who are satisfied and represent a driving force of a company. All these three elements contribute to gaining *loyal customers* and the final result and element is a *profitable enterprise* with a superb financial performance and reputation. The Mayo & Brown's competitive business model is imaged in Appendix A. Another approach to a successful business model is introduced by Voelpel et al. (2004), which puts the value creation into the spotlight. The value is created based on consumer requirements in a company and within networks, which are connected with a firm's external environment. The development of value in a company is dependent on its core strategy, vision, mission and objectives.



Picture 1: Value-focused business model (Source: Voelpel et al., 2004)

The creation of value for customers is according to several theoretical approaches (Voelpel et al., 2004; Barney, 1991; Porter, 1985) crucial for a company's competitiveness. However, it is not easy to define the value as each consumer might perceive it differently. Wiedmann et al. (2007) see the value as a multidimensional factor, which is represented by four levels of value perception. The financial value is directly connected with price of a product. The functional value is created by the product quality and its usability. Furthermore, the social value is important for a social status or prestige. And last but not least there is an individual value, which is unique for every consumer and reflects a personal attitude to a product or brand.



Picture 2: Dimensions of value (Source: Own-processed according to Wiedmann et al., 2007)

1.2 Sustainable development

The understanding of the term sustainable development has been evolving since the second half of the 20th century. Its basic definition was formulated in 1987 by the World commission on Environment and Development of the United Nations which says, that the sustainable development is such a development that enables satisfying of present

human needs without endangering claims of future generations to satisfy their needs (WCED, 1987). In a wider meaning, it is a targeted, continuous and complex process affecting all aspects of life at the local, regional and global level heading towards such a social model, which on one hand allows satisfying of all kinds of human needs or interests and on the other hand eliminates damaging of life conditions and ballasting of a country while smartly utilizing its resources and protecting its cultural or natural heritage (Ministry of Environment of the SR, 2001).

Another milestone bringing an important view of sustainable development was the Earth Summit in Rio de Janeiro in 1992 seeing the environment and development as coexisting elements, if they are in the right balance. The optimal relationship must be found between an increasing productivity and ballasting of natural systems, human /freedom and responsibility, efficient economy and solidarity as well as human indulgence and restraint (Vokounová et al., 2013). The summit distinguishes three dimensions – economic, ecological and social – which have to be in a harmony and work dependently on each other to achieve the sustainable development (UN Sustainable Development, 1992).

Stead & Stead (2012) support the idea of the three-dimensional model and they emphasise the important role of companies on the current way from the industrial revolution towards the “sustainability revolution”. By following the principles of the sustainable management and by integrating not only the economic, but also social and ecological dimension into company's strategies and responsibilities the change towards sustainability would become realistic. The need for this change has been lately more urgent than ever, because ecological risks such as extreme weather events, man-made environmental disasters or failure of climate change mitigation have been increasing their dominance in terms of their impact and likelihood. They have become one of the biggest challenges in the history with a very wide potential impact on the economy, public health and welfare. Therefore to prevent the world from their irreversible consequences an immediate reaction is necessary and companies with significant carbon footprint will be under pressure of governments and multinational organisations to implement steps leading to improvement (World Economic Forum, 2017; Makower, 2009). From the business point of view, the sustainability is these days the new society-driven imperative after the globalisation or dot-com boom (Lowitt, 2011).

1.3 Sustainable development as a strategic concept

1.3.1 Corporate Social Responsibility

In the light of above emphasised importance of companies in changes towards sustainability, the Corporate Social Responsibility (CSR) can be the first step. The concept of the CSR is not new, but its in depth understanding and significance have developed just recently. In 1970 Friedman presented his opinion that a profit-driven business is a company's main and only social responsibility increasing the public welfare (Friedman, 2008). However, in today's political, market and environmental conditions such approach cannot be considered appropriate and practicable as it ignores the social and environmental dimension of the sustainability concept. To become socially responsible, a company has to take into account not only its own business interests, but also interests of its stakeholders especially focusing on the environmental aspect (Zorkóciová & Šimorová, 2014). It should not be just a tool of marketing for improving a corporate image presented as some additional value, but it should be an integral part of company's everyday activities and conviction (Bukerová, 2013). Only if the CSR is allowed to become one of the critical factors of a company's business model and is considered in strategic plans, it can support firm's competitiveness (Albus & Ro, 2017).

As it is indicated above, even though the CRS is generally understood as organisational activities that have a higher purpose than increasing shareholders' value, there are two different types of CSR according to Pirsch et al. (2006) that differ the level of the CSR concept incorporation in a company. Firstly, it is the institutional CSR, where the CSR is a bit hidden from the sight of the public, because it is an essential part of organisational processes. The other type is the promotional CSR and as this term itself indicates, this concept is based on marketing and charity-focused activities that are mainly profit-driven with the intention to attract the attention of consumers. However, such approach to the CSR can be counter-productive as it does not lead to any long-term results and sustainability that can be achieved by the institutional CSR.

With respect to above mentioned promotional CSR and its commercial purposes, an inappropriate application of the CSR in a company can lead to a phenomenon of greenwashing (Makower, 2009). This means that a company abuses the meaning of the CSR and pretends being socially responsible, while in its core no improvement has come. In this sense companies use the CSR concept only as a tool of marketing covering their real impact on the social and ecological environment. To be perceived as a sustainable brand a company should involve the concept of the sustainable development into its every step and not only into the most visible ones interesting for the media (Pohl & Tolhurst, 2010).

1.3.2 Sustainable development from the view of strategy

The sustainable management and the CSR are overlapped as they both include corporate activities with respect to company's shareholders and environment. However, the sustainability management is at a higher level in terms of moving towards sustainability and it reflects a real intention of a company to become responsible. Such a management stems from firm's belief and understanding that the economic growth cannot be unlimited and that without its managing it could lead to serious social and ecological consequences. Therefore, apart from the economic success of a company, social and environmental aspect are the key decision making factors of managers (Stead & Stead, 2012). This harmony of all three sustainability dimensions has become a so called “triple bottom line” of a sustainable strategy. However, also this basic framework of sustainability was doubted by Lowitt (2011) who argues that nowadays active management of both the environmental and social attribute triggers the economic performance.



Picture 3: Basic three-dimensional framework of the sustainability management
(Source: Stead & Stead, 2012; UN Sustainable Development, 1992)

To develop a successful sustainability strategy, it must fulfil several criteria. There has to be a vision behind this strategy, its purpose has to be clear and it has to be generally believed within the company that the implementation of such strategy is urgent. It is also necessary to think in a wider context and not to stay just by eliminating firm's carbon footprint. It requires considering possible improvements in resource or waste management as well as thinking about the impact of the final product itself during its operational life and after (Pohl & Tolhurst, 2010). Lowitt (2011) even distinguishes between the sustainability strategy and sustainability infused strategy. He suggests that if a company aspires for being the “sustainable market leader” it should develop the sustainability infused strategy, which is the highest level of strategy maturity in terms of sustainability. The sustainability strategy is separated from the corporate and competitive strategy while the sustainability infused strategy is a company's corporate strategy where the sustainability takes over the role of the essential factor of competitiveness.

Attig and Cleary (2015) conducted a research investigating the relationship between managerial practices and the CSR in manufacturing companies. Their findings suggest that management quality practices have a major impact on a company's socially

responsible performance. Therefore the relevance of the CSR tends to be at a higher level if a company pays a significant attention to improvement of management quality practices. This might be explained by the fact that a higher quality prevents from errors and curiosity and therefore a pointless wasting of material, extra labour or shipping can be eliminated. To be more specific about the management quality practices in terms of the sustainable development, they can be associated with four main areas presented below (Bloom & Van Reenen, 2007):

- operations – modernisation of a company's production and increasing efficiency of processes leading for example to a lower energy consumption, better usage of material or shortening of distances within the indoor logistics;
- monitoring – it is important to observe implications of implemented changes and monitor the impact on productivity, ecological and financial efficiency and employees;
- targets – setting short-term and long-term goals relevant to sustainability and forming strategies to achieve them;
- incentives – stimulate employees initiation to bring their suggestions of improvement and reward their active approach and superb results.

The sustainability management has a difficult role, because it has to ensure that the change towards sustainability is complex and not only a matter of a sustainability department isolated from other corporate processes. One of the most important but also most difficult tasks is to achieve a change within the corporate culture, where the sustainability should become an integral part (Pohl & Tolhurst, 2010, Lowitt, 2011). This is the right way a company should follow if it intends to build a competitive advantage based on the sustainability concept.

1.3.3 Building a competitive eco-advantage

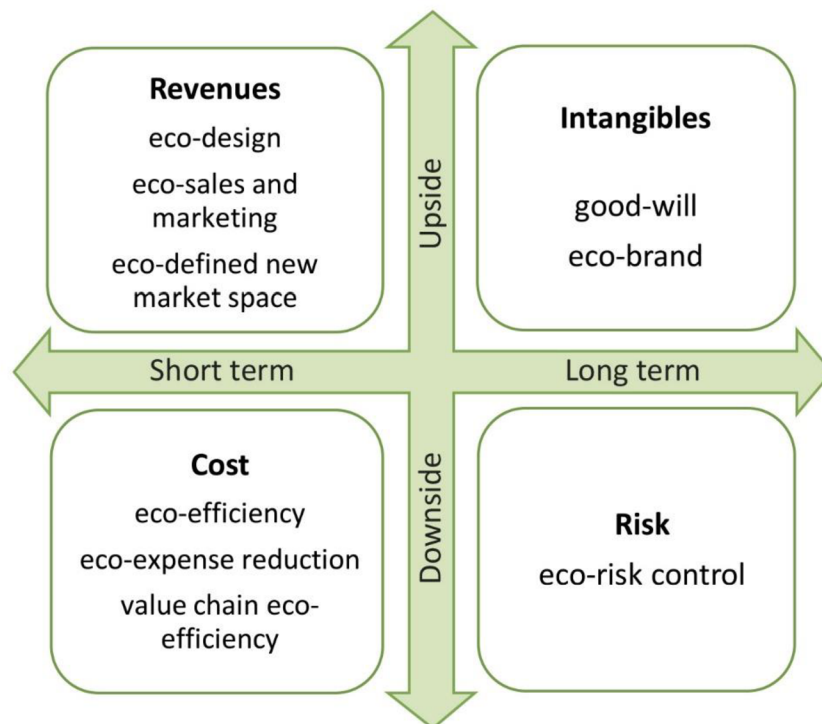
The term eco-advantage was first introduced by Esty & Winston (2009) and later it became a basis for other studies concerned with the issue of sustainable competitiveness

(Oxborrow & Brindley, 2013). In its simple form, the eco-advantage is a company's competitive advantage achieved by implementing sustainable practices that lead to satisfying customer needs while eliminating or improving the ecological impact on the environment. A framework for achieving the eco-advantage through a company's strategy created by Esty & Winston builds upon the Porter's understanding of a competitive advantage. His definition suggests there are two types of a competitive advantage – cost leadership and differentiation. He further explains, that “[c]ompetitive advantage grows fundamentally out of value a firm is able to create for its buyers that exceeds the firm's cost of creating it. Value is what buyers are willing to pay, and superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that offset a higher price” (Porter, 1985, p. 3).

The framework of the eco-advantage emphasises a company should be able to manage two main areas of activities, in particular the downside and the upside (Esty & Winston, 2009) or the bottom-line and the top-line (Lowitt, 2011) both having the same meaning. On one hand, a company should eliminate the negative aspects of its business. It means it should focus on the cost reduction achieved through improvement of resource productivity, which is also beneficial from the sustainability point of view. Furthermore, it is important to reduce or avoid the environmental costs in such sense that instead of spending large amounts of financial resources on pollution monitoring or environmental management a company should try to become so ecologically efficient that such expenses are irrelevant. Cost cutting and efficiency should be achieved throughout the whole value chain, for example a smart packaging downsizes the amount of material used as well as it contributes to a better protection of a product and lower shipping costs. Another element of the downside is managing and eliminating the risk a company faces in connection with environmental impacts of its activities. It is advised to investigate and predict, what environmental issues can arise after launching a new product or marketing campaign so that a company avoids having to deal with potential consequences.

On the other hand, a firm should simultaneously with taking control over the costs and risks support the growth of the positive elements. This involves increasing the revenue by designing such “green” products that satisfy current needs of environmentally conscious customers as well as developing new breakthrough products that might set a new trend in the industry (Esty & Winston, 2009). With respect to the green product

development but also sustainability innovation within the company generally, the approach described in Lampikoski et al.'s (2014) article suggests that the green innovation can be either evolutionary or revolutionary. The evolutionary innovation can be understood as step-by-step improvement of product features, processes, systems etc. that does not invoke any radical changes. The revolutionary innovation on the contrary may change the character of the industry. It is connected with a higher level of risk and is more cost demanding, but it can also bring a great success as may rapidly increase the value for stakeholders and extend the area of opportunities. Apart from the green innovation it is important to communicate the eco-friendliness together with other product attributes suitably to the right segment of customers. And last but not least, a strong branding tends to enhance company's good-will as well as the loyalty of its customers (Esty & Winston, 2009).

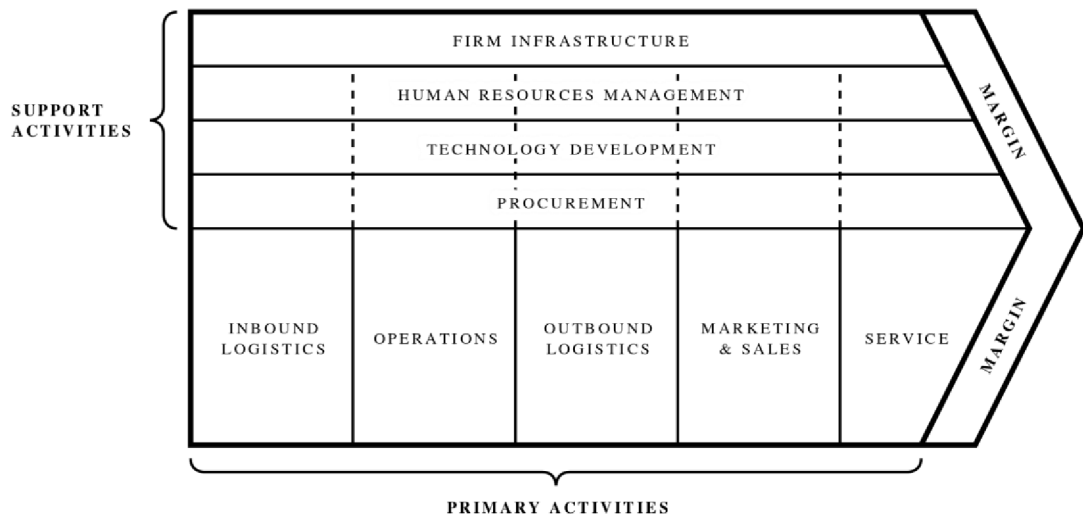


Picture 4: The Downside and Upside framework of the eco-advantage (Source: Own adaptation according to Esty & Winston, 2009)

As it is obvious from the described eco-advantage framework, it is necessary to implement changes in all parts of the value chain. Similarly, the study dedicated to green strategies and corporate sustainability suggests that “*the ongoing environmental changes will require organisations to reshape value chains and use natural resources in innovative ways*” (Lampikoski et al., 2014, p. 89). This is also emphasised in the Lowitt's CLEAR model of the sustainability strategy, where the consideration of the value chain is one of five steps of the cyclic process. The particular steps of the CLEAR model are as follows (Lowitt, 2011, p. 12):

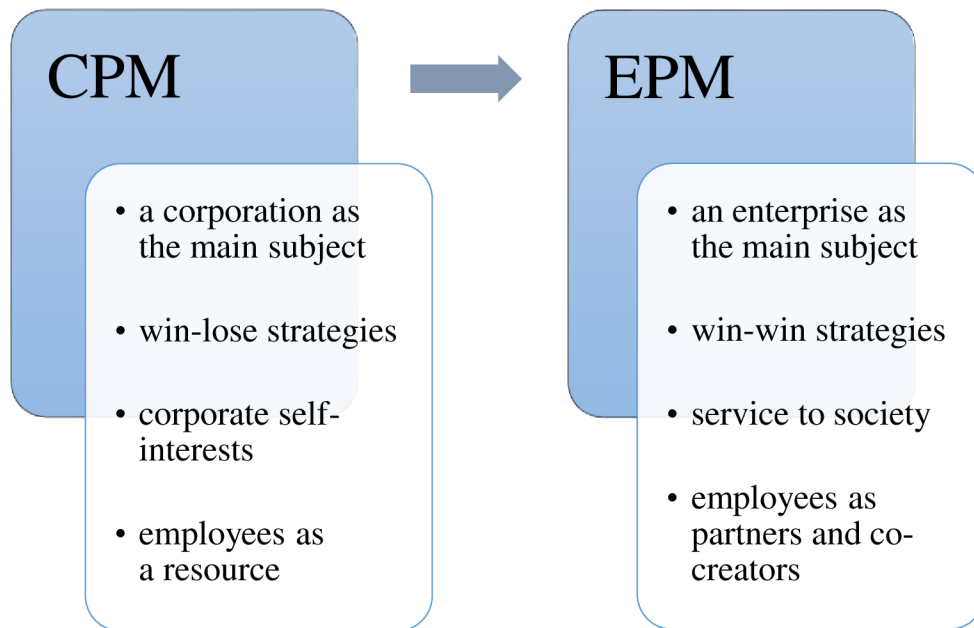
- Craft sustainability strategy
- Lead strategy and management efforts
- Embed sustainability into value chain activities
- Analyse and communicate sustainability performance
- Renew sustainability management efforts

As all above mentioned theories suggest that embedding the sustainability concept into a company's value chain is one of the basic assumptions of achieving the eco-advantage, it is necessary to look at the Porter's value chain directly. This framework was primarily created for manufacturing and it consists of two types of activities – primary and support. The primary activities directly contribute to creation and promotion of a product, but more importantly to creation of value for customers. The support activities cross-sectionally influence the main value creation process and are necessary for a smooth continuity of all primary activities. The value chain includes apart from the corporate infrastructure and departments other stakeholders that contribute to the outcoming value. Those are above all firm's employees, suppliers and other partners such as logistic companies etc..



Picture 5: Porter's value chain (Source: Porter, 1985)

With respect to competitiveness and sustainability, Harris & Twomey (2010) emphasise the importance of shifting from a traditional corporation perspective model (CPM) to an enterprise perspective model (EPM) that is more suitable for the 21st century and its contemporary issues. Each model represents a different style of a company's coexistence with other subjects of its value chain as well as with competitors, substitutes and new entrants that are a part of Porter's five forces framework (Porter, 1985). The corporation perspective model is based on the approach that a company's main aim is profit-driven and seeks to achieve own success, which is, however, limiting the success of others. On a contrary, the new enterprise perspective model builds on the assumption that a company cannot achieve the success on its own but only with co-creators that participate in the company's network. This corresponds with the understanding of the term enterprise presented in the article as a cluster of subjects following a common purpose (other than own success) that are interdependent. This concept is according to the authors capable of covering all three dimensions of sustainability. The shift to this approach will, however, require fundamental changes in a corporate mind-set and behaviour, unless a company started operating under such assumptions from the very beginning.



Picture 6: Shift from the corporation perspective model to the enterprise perspective model (Source: Own processed according to Harris & Twomey, 2010)

The model is applicable also in the automotive industry. In such case it is required to focus not only on the sustainability of the supply chain, but also on incorporating substitutes and competitors into the network. This could result for example in collaboration with competitors in the area of research and development or integration with public transport (Harris & Twomey, 2010).

1.4 Sustainable consumption

Increasingly stronger pressure from regulatory bodies but also from consumers has been put on firms in terms of being in compliance with the CSR and production of eco-friendly products. With the intensifying discussion about the significance of global environmental issues more and more consumers tend to prefer sustainable lifestyles. This change towards sustainable consumption is rather evolutionary and can be achieved in

long-term, but currently many ecological products have been struggling with their sales. This problem of a low demand is typical for high involvement green products, in other words for products that are not frequently purchased and their consumers decide more precisely and bear a higher risk by their purchase. This category of products includes technology-based products and more particularly also cars, which is relevant for this thesis. In case of such products green values seem to be less influential in the decision-making of potential customers. The reason of the mentioned problem is the so called “attitude – behaviour gap” or “values – action gap” presented in a Young et al.'s (2010) study focused on green consumer behaviour. Both “gaps” represent the fact that a positive consumers' perception of ecologically responsible companies might not be reflected in their purchases. This is due to several barriers that affect the consumer behaviour such as low availability of a green product or an incomplete understanding of its green benefits and sense. There are few success factors that enhance a probability a green product would be preferred to a standard one. According to Makower (2009) the criterions determining a willingness of a customer to buy an eco-product are as follows:

- If a brand of a product is well-known to a buyer and reputable
- **If a consumer can buy this product in places where he/ she normally shops**
- If the green product is at least as good as the standard one
- If a purchase of such product will have a low impact on consumer's habits
- **If a product is not more expensive**
- If there is some another benefit of such product apart from its eco-friendliness

A similar list of success factors was created by Young et al. (2010), with the focus particularly on technology-based products. Before a purchase of a green product several barriers can negatively affect a decision of a potential customer and usually these barriers appear when some of these success factors are not fulfilled:

- The green value of a consumer is significant
- The consumer has already purchased green products before
- The consumer is willing and able to spend a lot of time doing a pre-purchase research and deciding about the purchase
- The consumer has a good understanding of relevant ecological aspects in connection with the green product

- **There is a good availability of such products**
- **The consumer is willing and able to accept a higher price**

Some of these factors are overlapping and both studies have concurred that the aspect of availability of green products and their price (in bolt) are among others the most influential decisive factors. Some of the factors depend more on the green product itself and it means a company should not only focus on its development and production, but also ensure it is easily accessible and potential customers are well informed about its benefits and environmental issues that are addressed by the product. On the other hand there are consumer perspective factors affecting the decision making process that stem from customer preferences and capacities and might be specific for every individual. A brief summary of all mentioned product and customer perspective determinants based on the findings of Makower (2009) and Young et al. (2010) is shown below:

Product perspective factors	Consumer perspective factors
- product availability	- consumer's conviction
- price	- previous experience
- information	- time
- product features & benefits	- habits

1.5 Summary of the literature review

This chapter provides an insight into theoretical approaches on the topic of sustainable development and firm's competitiveness. In general the competitiveness is such a company's performance that ensures financial returns for its stakeholders (Buckley et al., 1988) or positions a company above its competitors (Lall, 2004). Several factors influence achieving the competitiveness and in its simple way they stem from firm and external environment (Rugman et al., 2012). The macro-environmental factors can be specific for a country or industry and some of them can be characterized as key success factors, which are directive for a company's superb performance on a market (Solberg Søylen, 2012). The firm specific advantages are internal aspects of a company, which can

become its competitive advantage if they are rare, valuable, inimitable and difficult to substitute (Barney, 1991). According to several authors it is necessary to create a competitive business model, whereby Voelpel et al. (2004) as well as Barney (1991) and Porter (1985) see the value creation as the key factor of competitiveness. The value can be explained as a multidimensional factor composed of financial, functional, individual and social value (Wiedmann et al., 2007).

Recently the competitiveness of many companies has been influenced by the concept of sustainable development, which can be taken as an opportunity or if ignored it might harm a company significantly. The sustainable development enables satisfying present human needs without endangering satisfaction of future generations' needs (WCED, 1987). It is characterized by the triple bottom line – the economic, social and ecologic dimension of sustainability (Stead & Stead, 2012; UN Sustainable Development, 1992). This should be taken into account also in a corporate strategy and overall management. To become a truly sustainable company, the sustainability management should be an integral part of everyday operations and the sustainability should be embedded in corporate culture (Pohl & Tolhurst, 2010, Lowitt, 2011). Esty & Winston (2004) developed the framework that describes the process of achieving the eco-advantage. It is a company's competitive advantage gained by satisfying customer needs while eliminating or improving the ecological impact on the environment. The eco-advantage framework emphasises two main areas of activities – downside and upside. On one hand, within the downside management a company should eliminate the negative aspects such as costs and eco-risk. On the other hand the upside management should by sustainability-focused activities support a company's revenues and intangibles. Several authors (Esty & Winston, 2004; Lampikoski et al., 2014; Lowitt, 2011) share the same opinion that sustainable companies should implement the sustainability concept into every cell of the value chain. It is important to create win-win strategies, which ensure the prosperity of employees, customers, society and all parts of a firm's network. Paradoxically, this can also refer to substitutes or competitors, for instance if an automotive producer collaborates with a public transport provider (Harris & Twomey, 2010).

The findings of Makower (2009) and Young et al. (2010) show that there are also several barriers affecting the success of a sustainable company and its green products. These barriers are connected to consumer behaviour. Even though more and more consumers prefer sustainable life-style, green products have to fulfil several conditions to be attractive for them. Ecologically conscious consumers decide for a green product if it does not influence their usual habits, they have a previous experience with it and its obtaining does not consume more time than usual. The green product should not be more expensive than the non-green one and an important factor is also the availability of information about it so that consumers understand its benefits.

2 ANALYTICAL PART

2.1 Industry analysis

Generally, Volkswagen operates in the automotive industry where it belongs to global key players as it is one of the world's largest car manufacturers producing 12 brands within one concern. Specifically to Volkswagen Slovakia, 5 of the brands and 6 different models are exclusively produced in the factory in Bratislava and exported to 148 countries of the world. However, with respect to the sustainability concept, taking into account the automotive industry specification is too narrow and it is more relevant to perceive Volkswagen within a sustainable transport industry. For this purpose the focus will be put on the automaker's sustainable solutions and the range of sustainable products. These might include predominantly electromobiles, hybrid and plug-in hybrid vehicles or CNG and LPG¹ powered vehicles.

The sustainable transport can be in this case understood as products and services that satisfy the need of everyday traveling that is ecologically efficient, which includes consumers that own a car but also those who do not. In other words, consumers solve a question, what kind of transport they will use for their daily trips to work, back home etc. so that it is cost-efficient, sustainable and it does not limit their mobility. This might, but not necessarily has to, lead to a decision to buy a car with low or zero emissions. The sustainable transport has become a widely discussed topic and its increasing importance can be expected as the transport industry is currently one of the major pollutants, especially in highly urbanised cities. In the EU approximately 94 % of transport is still dependent on oil as the energy source. Therefore the pressure to create zero emission cities and shift towards the sustainable transport will be increasing while the share of oil dependent transport should have decreased by more than 10 % by 2030 (European Commission, 2016). For instance, the EU reserved the budget from the European Funds specifically to support low-emission sustainable mobility projects (European

¹ CNG – Compressed Natural Gas
LPG – Liquefied Petroleum Gas

Commission, 2016). This is also the trend that makes the difference between the automotive industry, which is expected to be more and more restricted, and the sustainable transport industry, which is in contrast supported by the EU and national governments. This fact should gain attention of the traditional automakers as it might have a direct impact on them and force them to reconsider their current strategies. In the area of personal transport in cities, car traffic contributes to the climate change the most and for this reason it is likely to be eliminated by strict emission levels and regulations pushing cars away from city centres and replaced by an efficient public transport (Cox, 2010). Smart cities are not only a vision anymore, they are becoming a reality, which is likely to affect several business areas and as mentioned above, the automotive industry might be one of them. As a part of the sustainable development, there is an attempt to protect and expand green public zones which would contribute to higher living standards in urbanized areas. Bicycles and other green ways of transport are becoming more and more popular in several countries of Europe (especially in northern countries) as the smart mobility is one of the main attributes of smart cities (European Commission, 2015; TU Wien, 2015).

In North European countries motor vehicle ownership per 1000 inhabitants is getting lower and the public transport sufficiently covers mobility needs (Eurostat, 2016). In cities like Amsterdam, Copenhagen or Helsinki there is a tendency to push the car traffic out of cities, either by prohibiting their entrance into city centres or by making it easier for citizens not to own a car and use another ways of transport (Peters, 2015). On the other hand in Middle Europe (with the main focus on the Visegrad Four) the personal transport is still dependent on cars and the public transport is not developed enough to cover mobility needs of citizens (Eurostat, 2016). In Slovakia the individual automobile transport was the only kind of the personal transport that recorded growth within the time period 1995 – 2015 (Enviroportál MŽP SR, 2017). In the capital city Bratislava almost 40 % of citizens use their own car for their daily journeys and only 1.6 % use a bicycle (Devera, 2016). This causes everyday traffic jams, problems with parking and concentrated pollution in the city centre and the close area. Therefore current strategic plans of Bratislava put the goal to change the proportion of personal transport in favour of the sustainable transport into the foreground, which might be an opportunity also for companies of the private sector. However, there are still several barriers that decelerate

the shift towards sustainable mobility such as insufficient infrastructure (for example lack of charging stations for electric vehicles, separate cycle lanes, etc.) as well as above indicated consumer preference of cars. This behavioural aspect can be explained by several interdependent factors such as:

- unwillingness to change habits;
- concerns over the underdeveloped sustainable mobility infrastructure causing more time-consuming traveling (for example if choosing the public transport);
- the Slovak materialistic mentality that suggests owning a car is a necessity and an indicator of a social status.

With respect to all above mentioned, the sustainable transport is connected with eliminating the usage of classic vehicles with a combustion engine as one of the major CO₂ producers. However, with respect to the three-dimensional model of sustainability this could not be the only solution as it would meet only the ecologic dimension. Fuel-powered personal vehicles should be replaced by low or zero-emission vehicles as well as by an efficient public transport, bicycles and walking. This is overlapped also with shifting from non-renewable energy sources such as crude oil towards renewable sources, especially the solar or wind energy. All mentioned points are summarized in a sustainable mobility strategy of the EU in three major action areas (European Commission, 2016):

- increasing the efficiency of the transport system;
- speeding up the deployment of low-emission alternative energy for transport;
- moving towards zero-emission vehicles.

Car makers should therefore appropriately respond to the fast development of the sustainable transport and there are three main scenarios of their reaction. Those reflect different stages of their integrity with the sustainable transport:

- leaving the strategy unchanged

In such case no fundamental strategic changes would be made, a company would only adapt to valid emission limits. This would be, however, a rather uninnovative approach that is not likely to bring success in the long term. Only car makers that have a strong brand name and image based on attributes like

stylish design and driving performance can afford relying on such approach, but the question is, for how long this can sustain in the fast changing environment.

- adapting to the new concept

This approach shows a stronger engagement in the process of becoming a sustainable company, which does not only follow regulations, but perceives the shift towards sustainability as a trend. In this case the sustainability concept is integrated into a strategy, which should lead to fulfilment of pre-set goals regarding eco-efficiency improvement. Marketing and PR plays an important role at this stage.

- taking the new concept as an opportunity

Unlike the two previous stages, this one is not about adapting to new sustainability trends or regulations, but being their co-creator. This forward-thinking approach could push an automaker being step ahead of competitors and create barriers for them. The sustainability concept is the main pillar of a corporate strategy and if implemented and communicated appropriately, it can be a source of competitiveness. At this level a company might decide extend its activities beyond the production of automobiles.

An automotive company operating within the third stage can compete not only as a player in the automotive industry, but in the sustainable transport industry as well.

2.1.1 Key Success Factors

Based on the character of the sustainable transport industry there are several key success factors (KSF), identification of which can be helpful for evaluation of a company's current position in the industry. The KSF of the sustainable personal transport can be identified as follows:

- *Easy access* - offered product or service has to be easily accessible by the target segment of customers

- *Financial affordability* - offered product or service should be financially affordable and price-comparable with other less eco-friendly transport solutions
- *Eco-friendliness and efficiency* - provided personal transport solution should combine ecologic and functional features in a coherent way, whereby it should equally (or better) satisfy a customer's mobility needs comparing to common transport possibilities (especially combustion engine cars)
- *Appropriate communication and eco-awareness* - benefits of a particular green personal mobility solution should be intensively communicated to potential customers and explained appropriately, so that they are able to compare the benefits of such solution with a currently preferred transport possibility and they are aware of the intensifying necessity to create a sustainable way of living

2.2 Competitive environment analysis

2.2.1 Porter's Five Forces

The competitive environment within the sustainable transport industry and specifically to Volkswagen Slovakia can be characterized by five competitive forces shaping the industry, a framework first introduced by Porter.

Table 1: Porter's five forces in the sustainable mobility industry (Source: Own-processed according to Porter, 1979)

Competitive forces	Power/ influence level
Rivalry among existing competitors	low
Bargaining power of suppliers	
- <i>suppliers of universal components</i>	low
- <i>suppliers of specific components</i>	low – medium
- <i>technology and equipment suppliers</i>	high

Bargaining power of customers - <i>ordinary customers with low-volume orders</i> - <i>dealers and firms with high-volume orders</i> - <i>marketing and PR interesting customers</i>	low medium high
Threat of new entrants	high
Threat of substitutes	high

Each of the forces presented in the table above is further explained and characterised later on:

Rivalry among existing competitors

The rivalry among direct competitors of Volkswagen is rather strong as all major players in the automotive industry have also a range of green products in their portfolio, predominantly plug-in hybrid vehicles. Carmakers have been trying to reduce the price of electric and hybrid vehicles and simultaneously extend the capacity of a battery powering an electric motor. Marketing and brand name are very strong competitive factors in this case. However, traditional carmakers still compete especially on the market of classic cars with combustion engines and competition in the field of electromobility has been intensifying only recently. A specific case is Tesla, which unlike traditional carmakers has been working with a new business concept based on sustainability since the very beginning and it is embedded in the corporate vision and mission. On the other hand there are indirect competitors that satisfy the same need of mobility providing other solution than buying a car. This includes for example producers of bicycles, bike sharing, car sharing, ride sharing, public transport, etc., whereby the majority of those companies provide a service, not a product. The competition in the area of sustainable mobility has been intense recently in North European countries, where the infrastructure for sustainable transport solution is already developed. However, in the Slovak market and similarly in few other countries of the Middle European region the competitive rivalry within the focal industry has not been very strong so far due to several already mentioned reasons such as missing infrastructure or an unfavourable national mentality.

Bargaining power of suppliers

Before analysing the power of suppliers, it is necessary to define those that contribute to implementation of the sustainability concept into Volkswagen Slovakia. They can be divided into three groups: suppliers of components for the company's sustainable products that are universal and identical with components for conventional cars; suppliers of components that are specific only for sustainable cars; suppliers of equipment and technology that improves eco-efficiency of production processes. First of all, there are suppliers of universal components that represent the most often deliveries. Those are for example suppliers of most car body parts, breaking discs, shafts, window glass etc.. To save storage costs and also space, that can be utilized for extending of production instead of building warehouses where the stock would just stand, Volkswagen's logistics works on the basis of Just in Time (JIT) system. Therefore Volkswagen Slovakia has a very strong position in the distribution channel in relation to its suppliers of components. It orders goods in big amounts on daily basis and for several supplying companies it represents a major contributor to their sales figures. They have to adapt to Volkswagen's system of production and cooperate under conditions that ensure prompt deliveries and top quality of supplied components. If the conditions are not met (e.g. a delivery is late), a supplier takes over the responsibility for potential financial harms. It is necessary to have an efficient and well-developed information system and data sharing to ensure the whole cooperation is smooth as well as it is very tight and organized.

The second group are suppliers of specific components for e-vehicles, hybrids or CNG vehicles. As green products are produced in lower amounts, deliveries of components like electric motors, Li-Ion and Ni-MH batteries, CNG tanks are set differently. This can be seen also in the internal logistics of particular production halls, where the distribution of such components to production lines is less frequent. Therefore the delivery terms and conditions might differ slightly.

Beside the mentioned suppliers of components Volkswagen Slovakia cooperates with companies delivering the necessary equipment for processing of components and production. With respect to the sustainability concept several examples can be given. The factory uses so called BAT (Best Available Technologies) such as laser soldering stations, for production, manipulation and quality control KUKA robots are widely used and the

logistics within production halls is performed by DTS (driverless transportation systems). The power of such suppliers is stronger and in several cases the cooperation includes also contracting a particular company's employees. For example, employees of the company CEIT producing the DTS systems have their maintenance stations and work in all production halls where the systems operate.

Bargaining power of customers

Customers can be also divided into segments according to their bargaining power, which is the same or very similar in case they buy a conventional or an eco-friendly vehicle. Most customers are ordinary customers (families, individual persons, city or countryside inhabitants, etc.) who order series-manufactured vehicles. Even though they can choose and combine all parameters their car will have from the suspension type, breaks, transmission through the colour of the car body up to interior style, assistance systems and additional equipment, customers have no power to influence the price, delivery time or place and other conditions.

Furthermore there are customers (car dealers and companies) who order vehicles in larger amounts and therefore they might succeed in bargaining a better price or payment conditions. However, there is only limited space for pushing the price lower and there is no or minimal influence on other terms and conditions.

The third segment of customers are special customers who might not order big amounts and often, but they are interesting for Volkswagen from the marketing point of view. For instance, there was an occasion when Arab sheiks ordered a flotilla of SUVs usually in white or light shades of colours and sometimes, they have special requirements such as golden stitching in the interior. Felix Baumgartner ordered the fully-equipped Volkswagen Touareg and arrived for it directly into Volkswagen Slovakia plant by a helicopter. After receiving his Touareg he tested it straightaway on the offroad track, which is a part of the factory area. These examples are only exceptional and ordinary customers do not have such possibilities. Rich and influential customers and celebrities help improve prestige of the brand and therefore their bargaining power is rather strong.

Threat of new entrants

With regard to the fact that the topic of sustainability is becoming more and more popular and the infrastructure for sustainable transport is developing, it can be assumed that governments will continuously support initiative in this field and new or existing companies will see it as an opportunity. It is likely that they will try to bring modern existing concepts already established abroad to Slovakia and neighbouring countries as well as they might come up with new sustainable transport solutions. Similarly, existing Asian automotive companies producing hybrids and electric vehicles might change competitive rules if they enter the European market as their production costs are significantly lower and therefore Volkswagen Slovakia and other European car manufacturers cannot be price competitive. Similarly, new companies focusing on electromobility can be established and increase the competition. It would be challenging for new entrants to fight current strong European brand names in the automotive industry, but within the sustainable transport industry and electromobility they are a potential threat.

Threat of substitutes

Up to certain point the threat of substitutes overlaps with the above-analysed threat of new entrants as new entrants might substitute Volkswagen's products. This is connected with bringing new concepts of sustainable mobility to the market which would partially replace the usage of vehicles. For instance, the trend to use shared ways of transport instead of owning a car is becoming more popular and concepts like car sharing, ride sharing or bike sharing are finding their place in several European cities. Also the development of the public transport is a potential threat, which is a current topic also in Bratislava. Planned renewal of the main public transport nodes and worsening situation in the city car traffic might lead to changing preferences in favour of alternative transport possibilities.

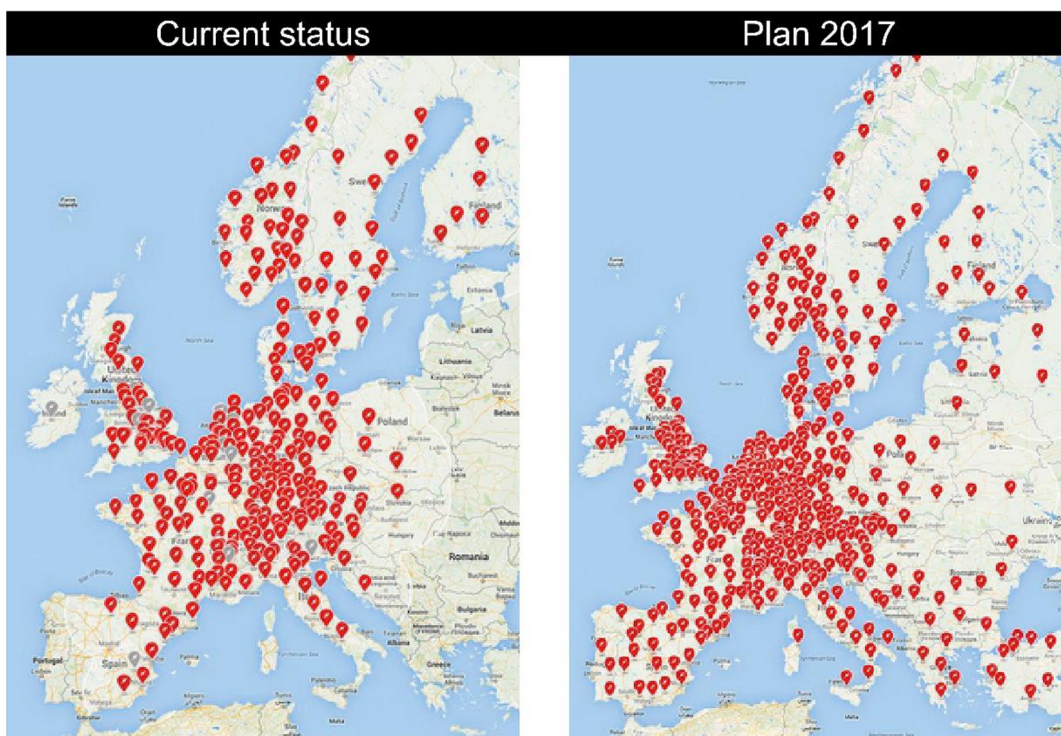
2.2.2 Evaluation of the key competitor's strategy

To be able to compare the current strategy of VW Slovakia within the sustainable mobility industry, it is necessary to at least briefly evaluate a strategy of a company which is a key player in the focal industry and is comparable with VW with respect to sustainable products both companies offer. For this purpose Tesla Motors can be perceived as an etalon as it is Volkswagen's competitor in the automotive industry, but taking into account it focuses only on the range of sustainable products it is simultaneously a major player in the field of sustainable mobility. This is in compliance with Tesla's mission “*to accelerate the world's transition to sustainable energy*” (Tesla, 2017), which should be achieved by increasing affordability of each new generation of Tesla vehicles and efficiency of renewable energy distribution. Therefore, Tesla cannot be characterized only as an automaker, but also an innovator in energetics as well in technology and design. Comparing to Volkswagen, Tesla is a young corporation founded in 2003, whereby the sustainable development was the main motivation factor of its establishment and therefore it is the bearing pillar of a corporate strategy and the driver of company innovativeness. It is one of the fastest growing companies and even though the business had been accompanied by a loss until recently, when the company started to be profitable (Medhora & Sage, 2016), its CEO Elon Musk has never stopped following his vision and turned efforts into a global success. In 2016 Tesla achieved a record number of Model S and Model X orders and comparing to 2015 its revenue grew by 73 % (Tesla, 2017). Interesting results were recorded in the area of energy generation and storage where Tesla's revenues rapidly increased by 1043 % within one year (Tesla, 2017).

As indicated above, Tesla's activities extend the scope of electromobility production and include also renewable energy production and distribution. In this field Tesla vertically diversified into the mass production of Li-Ion batteries, which are the key and most expensive components in purely electric vehicles. For this purpose Tesla built a Gigafactory in Nevada, where it began in cooperation with Panasonic with production of batteries in January 2017 (Fiegerman, 2017). The Gigafactory should reduce cost of batteries by 30 %, which should be achieved by the mass and automated production. The cost reduction will be achieved from long-term perspective also by its eco-efficiency as

it is designed to self-supply the energy from solar and wind energy collectors that are placed on the factory's roof and in its close area. Thanks to the Gigafactory Tesla should be able to produce more batteries in 2018 than it was produced in 2013 worldwide and cover the production of 500 000 e-vehicles (Tesla, 2017). This is very important for production of Model 3, which is Tesla's first high-volume and most affordable electric car so far. With its range 345 km per charge, sports design and starting price around 30 000 € it will hardly find competition within its category on the European market (Tesla, 2017). However, the delivery time is long, one year in approximate.

To support the demand for its electromobiles and fulfil ambitions about the energy distribution, Tesla lays importance on building the infrastructure of supercharging stations in all parts of the world where Tesla cars are available. The network should cover continents so that it is possible to drive across them without being limited by unavailability of supercharges. For instance, Tesla has currently installed six new superchargers by the Aupark shopping centre in Bratislava (Tesla, 2017).



Picture 7: Planned expansion of TESLA supercharger network in Europe in 2017
(Source: Own-processed according to Tesla, 2017)

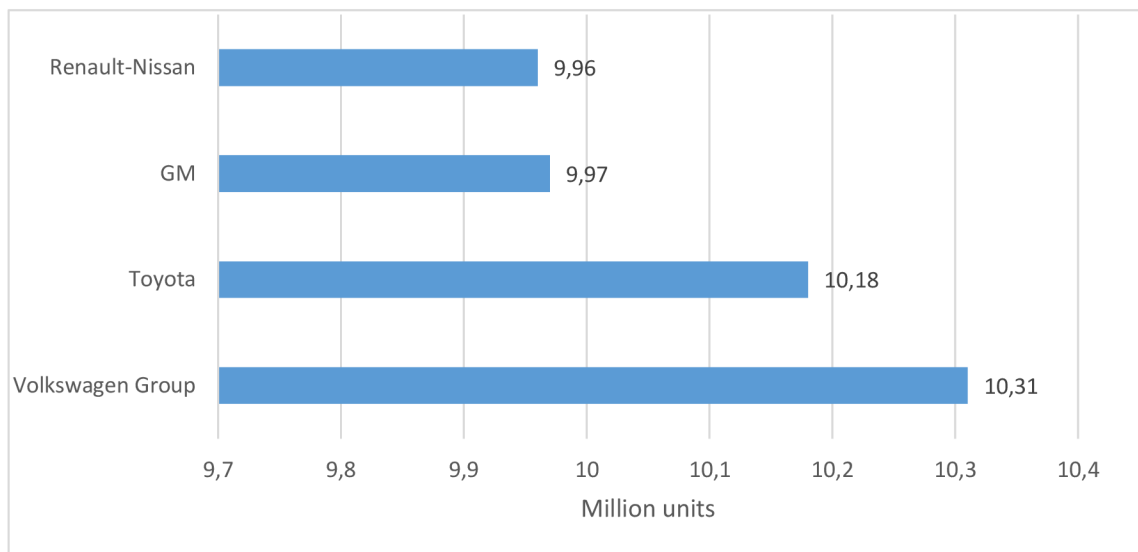
Apart from mentioned partnership with Panasonic and Supercharger network development Tesla cooperated with and later acquired SolarCity, solar panels producer, which is another important strategic step. With solar panels on a roof and integrated Powerwall, Tesla's solar energy storage and supply device, households can collect the solar energy during the day, store it and use it anytime it is needed. This way, Tesla's customers can become independent from public electricity supply and prices and they can charge their electric vehicle or supply their households with the renewable energy source (Tesla, 2017). Consequently, Tesla can be considered a truly sustainable company implementing its ecologic thinking into every aspect of its eco-efficient production, production of eco-friendly products and worldwide sustainable energy supply.

2.3 Evaluation of Volkswagen Slovakia's strategy

Even though Volkswagen Slovakia is a separate strategic unit, its strategy is subordinated to the strategy of the Volkswagen Group and therefore it is necessary to take it into account in the following analysis. Volkswagen AG is a German automotive concern with a long tradition and since its establishment in 1937 it has grown into one of world's top carmakers and European largest carmaker. Currently it covers 12 brands² and globally it has built 120 production plants. Within the automotive industry for several years it has been competing with Toyota for the leading position and the graph below shows that according to global sales figures Volkswagen recaptured the position of the industry leader in 2016.

² Volkswagen Passenger Cars, Audi, SEAT, ŠKODA, Bentley, Bugatti, Lamborghini, Porsche, Ducati, Volkswagen Commercial Vehicles, Scania and MAN

Graph 1: Leading motor vehicle manufacturers worldwide in 2016, based on global sales (Source: Statista, 2016)



Moving to the corporate strategy of Volkswagen, until recently the Strategy 2018 used to give direction to corporate activities (see Appendix B). This strategy was in charge when Martin Winterkorn was the CEO and although it changed VW's original strategy significantly, the sustainable development strategy was still only its parallel and extension. However, after the recent events connected with Dieselgate crisis and changes in management, the current CEO Matthias Müller introduced a new concept “TOGETHER – Strategy 2025” which is revolutionary and reshapes corporate core values. The corporate vision transformed from becoming the globally leading *automaker* into becoming the globally leading *provider of sustainable mobility*. The sustainability concept is recognizable also from group incentives that should trigger the change towards the new vision.

Table 2: TOGETHER – Strategy 2025 Group initiatives (Source: Own processed according to Volkswagen AG, 2017)

Transform core business	
1.	Sharpen positioning of brands
2.	Vehicle and drivetrain portfolio

3.	Streamline modular architectures
4.	Partnerships in the economy segment
5.	Self-driving system and artificial intelligence
6.	Battery technology as a core competency
7.	Best-in-class user experience
8.	Implement model line organization
9.	Realign “Components” business
Build mobility solutions business	
10.	Build mobility solutions business
11.	Develop and expand smart mobility offering
Strengthen innovative power	
12.	Drive digital transformation
13.	Create organization 4.0
Secure funding	
14.	Improve operational excellence
15.	Optimize business portfolio
16.	Integrate strategy and planning process

At least four of above introduced initiatives directly contribute to corporate transition to sustainability and becoming more a part of sustainable mobility industry than the automotive industry. Within the incentive *Vehicle and drivetrain portfolio* Volkswagen plans to develop 30 new electric vehicles by 2025. Another very important initiative is the ambition to become the technology leader in solid state *batteries*. Volkswagen recognized the necessity to improve the capacity of batteries and push the costs of their supply and/or production down to become competitive in the area of e-mobility and from the future perspective in the sustainable mobility industry. Therefore new battery technology will be developed in Volkswagen's centre of excellence. Furthermore, there are two overlapped incentives *Build mobility solutions business* and *Develop and expand smart mobility offering* that suggest Volkswagen tends to focus on new mobility solutions apart from passenger and commercial cars and a proof of that is the establishment of a new innovative transport services company MOIA in 2016

(Volkswagen AG, 2017; Bureš, 2016). MOIA wants to bring innovative systems of transport to urbanized areas, integrate with public transport infrastructures and introduce new transport-on-demand and sharing concepts in large cities available and affordable for everyone. Within its first steps the company aims to implement new mobility solutions in Berlin (MOIA's headquarter) and Hamburg (MOIA, 2017).

Particularly Volkswagen Slovakia has been running its operations since 1991, when Volkswagen bought 80 % of shares of BAZ company in Bratislava, the factory has been fully owned by Volkswagen since 1999. Currently 5 different brands and within that 6 different models are exclusively produced in this factory. This is one of the facts that make this plant unique and it shows its flexibility of the assembly process. From SUVs it is Volkswagen Touareg, Porsche Cayenne and Audi Q7 (additionally also underbody for Bentley Bentayga), the New Small Family (NSF) consists of Volkswagen up!, Škoda Citigo and Seat Mii.

VW Slovakia operates under a strategy that follows main goals until 2018. The firm strategy has to be in compliance with the environmental strategy called Think Blue, which focuses on two main areas: eco-friendly products and eco-friendly production. Firstly, vehicles produced in the plant Volkswagen Slovakia are to be eco-efficient and generate low CO₂ emissions. With respect to this the Blue Motion technology is used in vehicles to help driving efficiently and reduce the consumption. SUV vehicles have an additional tank for Add Blue – carbamide – which is injected into an engine to lower emissions. Audi Q7 is built on the principle of the lightweight construction, whereby the new generation is 325 kg lighter than the previous one, which highly contributes to a lower fuel consumption. The concept of lightweight construction was initialised by reversing the weight spiral³ and it is followed also by Porsche Cayenne and soon Volkswagen Touareg. Apart from classic vehicles VW Slovakia produces also a range of vehicles with an alternative source of power. From hybrid vehicles it is Volkswagen Touareg Hybrid, Audi Q7 e-tron is the plug-in hybrid and from NSFs Volkswagen e-up!

³ There has been a tendency that the weight of a vehicle increases with increasing comfort and driving performance. However, by reversing this weight spiral the weight of a vehicle is decreasing without limiting comfort or performance. This can be achieved by usage of light materials (aluminium) and efficient design of components resulting in lower consumption, smaller fuel tank, etc..

is produced as a fully electric zero emission vehicle. NSFs are also provided in the version with the CNG.

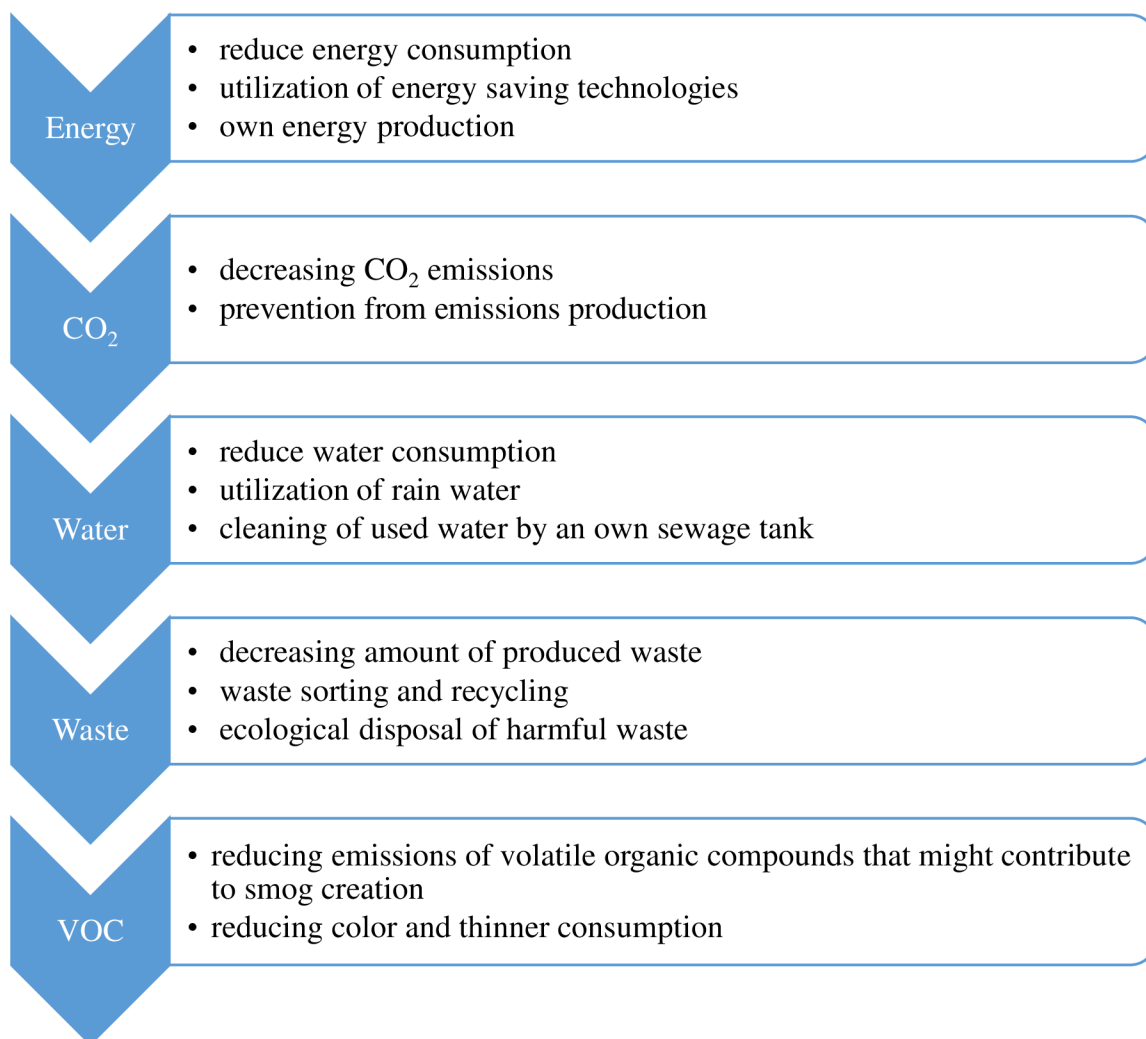
Secondly, the production focused part of the strategy called Think Blue. Factory ensures that production processes, systems, logistics, waste management and other processes within daily factory operations not only meet ecological standards, but achieve superior results in terms of eco-efficiency. For this purpose, in production halls Volkswagen Slovakia uses so called BATs (Best Available Technologies) that help save energy, water and eliminate the amount of waste while they are efficient from the productivity point of view. In the press shop, both presses and cranes transporting pressing dies use the recuperation system, which enables them to reuse the kinetic energy. In body shops the roof is soldered (in case of Audi Q7 welded) with side components by laser and this technology saves more than 30 % of energy. After the soldering, connected parts are grinded and during this process the air from this grinding station is sucked into a centrifugal machine where all particles of the grinding dust are filtrated and recycled with the rest of the scrap. The new generation of robots in the body shop Audi Q7 are lighter and especially their welding clamps and other arm tools are approximately 50 % lighter, which means their energy consumption is lower. The paint shop in VW Slovakia is one of the most ecologic ones as it uses several modern technologies that help use the paint very efficiently and eliminate emissions. For instance, a new technology EcoBell 3 saves 70 % of the painting material and an e-scrub technology decreases the amount of emissions by 90 % by filtrating and separating particles of the paint (VW Slovakia, 2012). This is also connected with the waste management. The waste is separated and generally, approximately 70 % is sold and reused, the rest is ecologically disposed. In 2015 VW Slovakia managed to reuse 96.81 % of the waste from the production process (VW Slovakia, 2016). In the aggregate hall aggregates are transported from the preassembly of motors to the finish production line by the electric suspension system which both increases the safety of workers and decreases the energy consumption. Furthermore, the logistics within production halls is performed by FTS systems⁴, which are the systems without a driver powered by the magnetic force and electric energy using induction lines on the floor determining their tracks. These logistic systems help save approximately 60

⁴ FTS – Fahrerloses Transportsystem

% of the energy and increase the safety of employees. The internal factory personal transport and logistics is also a part of the emission-cutting strategy and it is a very important aspect of factory smooth operations as it covers more than 1.8 km². There is 7 charging stations for electromobiles within the area of the factory as VW e-up!s are widely used as service cars for departments of VW Slovakia. Another very common way of transport of employees are bicycles that are available all over the factory. VW Slovakia has also its own sewage tank for cleaning of water and in many parameters this water is cleaner than the water in the local pond Mláka, where the water from the sewage tank is drained. Apart from the waste water treatment plant VW Slovakia produces some percentage of the electric energy on its own by solar panels mounted on the roof of the showroom as well as by collectors of the wind energy. The electric energy from the supplier comes from the renewable source as well – from water (Avantgarde, 2017).

An important aspect of the strategy is its implementation and communication to employees so that they understand its benefits and act in compliance with its goals. There are 50 employees in the Think Blue department who care about the environmental strategy and its appropriate implementation. Additionally, employees outside of the department are responsible for their focus-areas to be in compliance with the Think Blue strategy and spreading the environmental awareness. Employees are well informed about the Think Blue strategy and current news and goals of the strategy are always displayed in production halls. There are also various contests and events for employees that are to motivate them to behave eco-efficiently. They are financially rewarded for ideas how to improve any aspect of production or other processes that might lead to higher eco-efficiency. For instance, one employee suggested that copper tips on welding claps can be grinded and re-shaped at first and this way their operational life can be prolonged before they are changed for new ones. This idea was implemented into praxis and it helped both reduce the amount of produced waste and reduce costs (Avantgarde, 2017).

The main goal the Think Blue strategy is Volkswagen Slovakia to be 25 % ecological in 2018 in comparison with 2010. To evaluate achieving the goal there are 5 determinants of the strategy that are regularly measured. It is the energy and water consumption, CO₂ emissions, waste and volatile organic compounds emissions. With respect to the main goal of the strategy, all indicators (presented also in the figure below) should achieve at least 25 % reduction by the year 2018 (VW Slovakia, 2016).



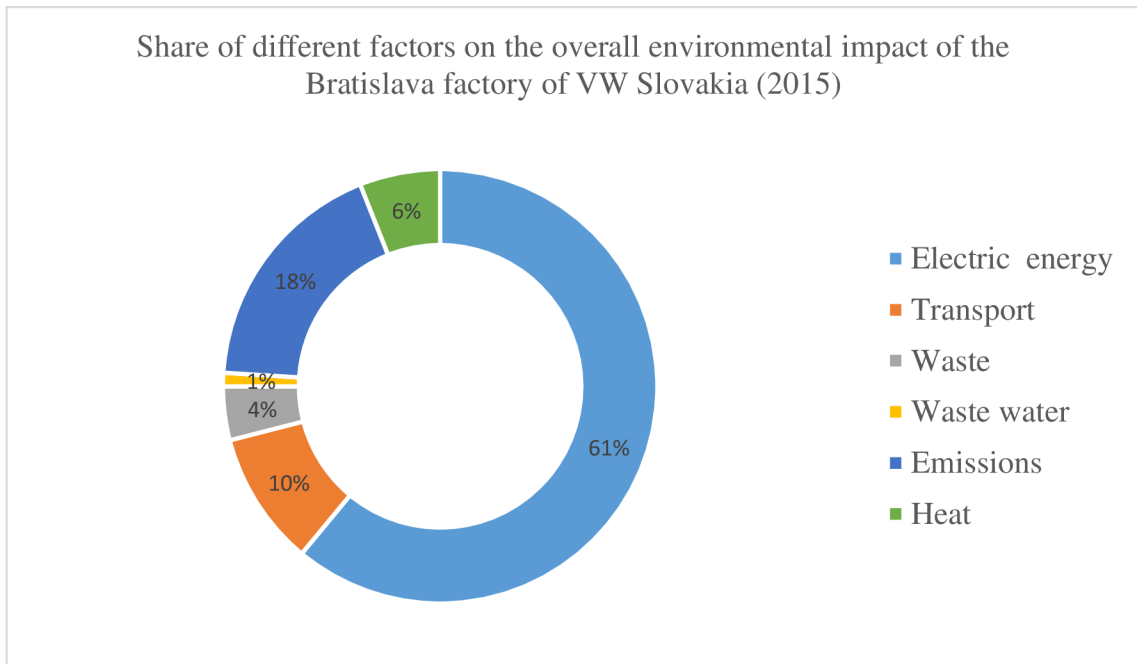
Picture 8: Five eco-determinants for measuring of success of the Think Blue strategy
(Source: Own-processed according to VW Slovakia, 2017)

Volkswagen Slovakia regularly evaluates steady fulfilment of the goals from the above mentioned areas, whereby already in 2015 some of the goals were reached, or more specifically, some of the determinants were already reduced by 25 % in advance of 3 years.

However, according to the triple bottom line or three dimensions of sustainability, a company should ensure that apart from the economic and ecological aspect also the

social dimension is in a harmony. Regarding employees, Volkswagen Slovakia pays above the average wages to its employees and within the automotive industry in Slovakia they are the highest. The average salary is 1 700 Euro per month and the company has developed a beneficial social system for its employees. They get a 13th, 14th and 15th salary, holiday allowance, allowance in case of a new-born baby, loans without interest up to 16 600 Euro, dotation of meals, discounts for cars and service discounts, etc.. Benefits for employees are increasing with number of years of working in the company. Employees have a possibility to grow and build their career, on the other hand Volkswagen has a stable workforce. The stability and loyalty of employees should be enhanced by the current change in the firm culture and attitude to employees. The idea is to create fans from employees so that they are proud and motivated to work for VW Slovakia (VW Slovakia, 2017). The loyalty of employees is especially important these days as there is an increasing demand for skilled labour force in the automotive industry in Slovakia due to new production plant of Jaguar opening near Nitra. This fact as well as other aspects might have led to triggering the strike organized by the Modern Labour Union Volkswagen. The labour union asked for 16 % salary rise, which is by 12 300 employees, high costs of new models production start and other factors currently an excessive requirement. The strike was held from 20th to 25th June 2017 and was finished by the agreement on the gradual 14.12 % salary rise by November 2019, 500 Euro block grant in July 2017 and other bonuses (TVNOVINY.SK, 2017). This shows the willingness of VW Slovakia to react on requirements of employees and ensure their long-term satisfaction. However, it is an interest of both sides to avoid a similar situation in the future by an early and appropriate communication and mutual understanding.

Graph 2: Environmental impact of Volkswagen Slovakia (Source: Own-processed according to the Environmental report 2016, VW Slovakia, 2016)



2.3.1 Eco-advantage framework

To evaluate the current status and future development areas in terms of achieving the eco-advantage in VW Slovakia, the Upside and Downside framework will be used (described in the literature review). To be able to gain the eco-advantage, VW Slovakia should manage the upside activities, which includes increasing revenues and value of intangibles. Regarding the focal company they can be evaluated as follows:

Revenues

- *Eco-design*

With regard to current products of VW Slovakia car factory, they are designed to be as efficient as possible within their category and the importance is laid on smallest details throughout the whole production process. In other words, the eco-design is applied in the car body including its painting, in the drive train and interior components. This was triggered especially by the production of Audi Q7, which is predominantly made of

aluminium and shape and other attributes of all components in its body and drive train are precisely designed to be as light as possible but strong enough. The lightweight construction can be therefore assumed as a method of the eco-design and the following generation of the VW Touareg and Porsche Cayenne will follow this trend. The eco-design is also applied in the factory arrangement as all production and logistic facilities have their strategic location as well as the layout of each hall is very sophisticated.

- Eco-sales and marketing

Sales of vehicles to end consumers is in competence of car dealers and their sales practices may vary. But marketing is a matter of Volkswagen AG and partially of Volkswagen Slovakia. Marketing and overall image of the company is currently changing and puts more focus on the ongoing shift towards hybrid and fully-electric drive. This can be noticed also in the new image video of VW Slovakia, which is presented to visitors of the factory and which shows in a nutshell how the production and other processes work in the company. Comparing to the original movie the new one pictures the electromobility and hybrid drive as a usual part of the factory's daily production. A part of marketing and PR is also presentation and introduction of VW e-up! to the public and with respect to this test drives with an instructor are performed, the car takes part in various exhibitions and events or it was used as a part of sponsoring for organisational purposes during the theatre festival Istropolitana held in Bratislava, where VW Slovakia provided two electric vehicles with drivers. Another current example of a good way of self-presentation and providing an easy access to the e-up! is given in the section below.

- Eco-defined new market space

The Volkswagen AG has already defined the new market space in the area of sustainable transport, which has led to establishment of the thirteenth Volkswagen Group brand MOIA. VW Slovakia itself has currently developed an initiative in the field of electric car rent. In closest future 7 VW e-up!s will be offered for rent in the Old market building in the city centre of Bratislava within the scope of the new project set up in cooperation of Old market with VW Slovakia. The contract is signed for 2 years and anyone including tourists will have a possibility to hire the electromobile for 1 day or longer for app. 35 Euro/day. In the price the navigation system with an application is included, which navigates a driver to main historical and other popular places in

Bratislava and its surrounding and also to the factory VW Slovakia, where people can find out more about this car and how it is produced. People hiring the e-up! will be responsible for its charging, whereby they will be instructed how this is performed. One supercharger will be available directly at Old market, where a customer takes the car over.

Intangibles

- Good-will

With regard to sustainability and eco-friendliness Volkswagen AG's good-will was badly damaged due to Dieselgate crisis in autumn 2015. This crisis has led to a lot of changes within Volkswagen Group and its strategy, but it still needs more time and action to fully recover from this cause. VW SK itself might not suffer as heavy damage on good-will as VW AG, but anyway its image of a sustainable company is questioned and requires some progressive steps to be on one wave with the new group strategy.

- Eco-brand

Neither Volkswagen as a group nor its particular brands of vehicles are perceived as eco-brands. However, from the long-term perspective the new strategy of VW AG leads the company this direction. Creation of the new brand of sustainable mobility MOIA might contribute to the shift towards becoming an eco-brand. The obstacle in this case is the above mentioned fact that the good-will of VW in terms of eco-friendliness was harmed and therefore it is a difficult task now to build an eco-brand. VW Slovakia is one of the most eco-efficient factories of the VW group, but still is not classified by the public as an eco-brand.

Apart from the upside activities there are determinants which should be downsized so that the company can achieve the eco-advantage. From the short-term perspective VW Slovakia should reduce eco-inefficient costs and in the long term risk should be eliminated. Both factors are further explained below:

Cost

- Eco-efficiency

In VW Slovakia cost reduction and eco-efficiency are complementing processes. The company invests into modern technologies – BATs – that might bring a higher initial

investment but during their operations they reduce the amount of used energy, water, produced waste etc., which is simultaneously cost-saving and eco-efficient. These technologies have been already introduced in this chapter as well as the well-organised internal logistics that eliminates tracks which must be overcome by components.

- Eco-expense reduction

The reduction of eco-expenses can be understood as reduction of costs that must be paid by a company to keep its operations in compliance with environmental regulations or in case of being above the regulatory limits they might include fines, additional costs of various permissions, administrative work, etc.. Taking into account the emission crisis, such eco-expenses of VW AG have grown rapidly recently as it has had to solve the consequences of the ecologic scandal and spend financial resources for the crisis management and preventing a similar situation. VW Slovakia carries only a minimal part of this financial burden and its eco-expenses are not very high due to the significant eco-efficiency, however, it can still work on pushing its carbon footprint lower. For instance, the company still has to allocate resources for an ecologic liquidation of the harmful waste and prevention of toxic substances release into the atmosphere or underground water. By elimination of such waste and usage of harmful substances in production processes these costs would be reduced.

- Value chain eco-efficiency

As presented in the theoretical part, it is important to implement the sustainability concept into all parts of the value chain. In VW Slovakia this concept has been integrated in the primary activities for a longer time already, especially since 2010, when the Think Blue strategy triggered the change towards eco-efficiency of the factory's production and products. Recently the focus has been put also on the support activities, but it is difficult to evaluate to what extent they are eco-efficient due to its difficult measurability and lack of information. One example can be given concerning mobility of employees, according to new rules of VW Slovakia all contractual buses transporting employees in times of shift changing must not be older than 5 years, which are likely to be more efficient and also to motivate employees to travel by buses instead of cars. For employees positive, but from the ecologic point of view counter-productive is the running construction of a new park place.

Risk

- Eco-risk control

To be able to keep and protect the eco-advantage, it is important to manage the downside of the eco-risk. VW Slovakia controls the risk by implementing the best technologies and security systems, practicing multiple controls, precise organising, continuous planning and risk management. It is difficult to evaluate what exactly was the weak point of the chain and who everyone was responsible for the emission crisis and inbounding cheating devices in VW vehicles, but it was an example of unmanaged eco-risk control which could have ruined the whole corporation or its majority. VW Slovakia as well as the whole group should therefore increase the precision of vehicle control and transparency to prevent a similar situation. In connection to eco-risk there is also a question of corporate responsibility for its products at the end of their life cycle and waste they create. Currently VW Slovakia takes responsibility for the waste from the factory's production and operations including the waste water. However, there is no incentive to extend it to waste from its products. With the increasing production of hybrid and electric vehicles this might become a problem in the future, as there will be a lot of waste from used batteries, which is a potential ecologic danger.

2.3.2 Position on KSFs

To be able to characterise areas that need improvement to enable the company achieve success in the sustainable mobility, it is necessary to evaluate the position of VW Slovakia on KSFs of the industry already presented in the chapter 2.1.1.

- *Easy access* – taking into account the central European market, the access of potential customers to green products of VW Slovakia is as easy as the access to classic vehicles and therefore customers do not have to make a stronger effort to order a hybrid or electric car. However, the fact that usage of such vehicles is strongly dependent on accessibility of charging stations cannot be ignored. In Slovakia and also in surrounding countries (except capital cities

like Bratislava or Vienna) the infrastructure of charging stations is underdeveloped and superchargers are barely accessible. VW Slovakia itself has not taken any action to solve this problem (apart from building charging stations in the area of the factory and car park for employees) and therefore the usage of electric cars (partially also hybrids) is limited as it requires drive planning.

- *Financial affordability* – in comparison with VW up! with the combustion engine, the fully electric e-up! is much more expensive as its price is more than doubled (begins at 24 900 Euro). The initial investment is high and it is one of the main factors that argue against buying the e-up!. Even though the price of electric energy is lower than the price of oil resulting in driving costs app. 2 Euro/ 100 km, the return of investment is a long-term matter dependent on shifts in electricity and oil prices. However, within the sustainable mobility industry the focus cannot be put only on sales of e-vehicles of VW Slovakia but on their usage in general. With respect to this, the company has lately come up with a new project called 'up! city', which offers e-up!s to a wide public for affordable prices (Avantgarde, 2017). This project is further described within the point *appropriate communication and eco-awareness*.
- *Eco-friendliness and efficiency* – comparing to gas powered cars, by driving an e-up! the amount of locally produced emissions is zero. Therefore it is an eco-friendly transport solution and in cities it is also an efficient solution. With an electric car it is possible to get the best park places, it is not necessary to visit petrol stations and the car can be charged at public charging stations for free. However, it is important to have a garage where the electric car can be charged in case there is no access to public chargers. Furthermore, with its limited range 160 km it is not appropriate for longer distances and therefore it does not cover all transport needs and does not replace combustion engine cars. In such case it does not bring the functional value and it is more efficient to own a hybrid car or use the public transport. Moreover, owning a car is not very efficient taking into account that the most of the day it just stands unused at a park place. With respect to this not even the car rent service is an appropriate solution as it offers e-up!s for a fixed price per day.

- *Appropriate communication and eco-awareness* – VW Slovakia has been advertising mainly its major products which are the cars with combustion engines, but lately also its electric vehicles have been brought into sight of public. It has been introduced at various exhibitions and events such as Ekotopfilm, which is a festival of movies with focus on the topic of sustainable development. Also the fresh electric car rent project 'up! city' in the Old town of Bratislava contributes to better understanding of advantages of VW e-up! and people can get more familiar with the car. This also partially solves the problem of the high price of the e-up!, the car rent service makes e-up! accessible and financially affordable for anyone. Its presentation seems to be for now sufficient, but it still needs more time to achieve that the public fully understands its benefits. In Slovakia and neighbouring countries generally the weaknesses of the electric car such as its high price and low range still outbalance its benefits and its ecologic gain is therefore pushed aside. If speaking about buying the car, at the moment, the e-up! is more for ecologically aware customers who do not care about its price and it is important for them to eliminate their carbon footprint. However, it is very difficult to explain its benefits to the general public and even if people are aware of them there are still many limitations that deter them from buying the car.

To evaluate the overall position of VW Slovakia on the KSFs, none of four above mentioned factors is fulfilled completely. On one hand, there is a good access to the company's electric and hybrid vehicles, minimal driving costs, it is an ecologic and in cities also a very efficient mobility solution and lately it has been also often advertised in Slovakia. On the other hand, the availability of charging stations (except large cities) is insufficient, the initial investment into an electric car is very high comparing to other mobility solutions, fully electric cars lose their functionality by longer distances and people are still not fully aware of their ecologic contribution or it is still not the decisive factor for them. However, if VW Slovakia continues reshaping its strategy and further diversifies into areas of mobility solutions covering the needs of the modern society, it has a great potential to leapfrog competitors.

2.4 Summary of the analytical part

VW Slovakia has gone through a rapid development since it started operating in Bratislava. Currently it is one of the most eco-efficient factories of the VW Group producing hybrid and fully electric vehicles alongside with combustion engine cars. However, in the sustainable mobility industry and comparing to the company's main competitor Tesla this might be not enough. The firm's strategy has reacted on the current situation by introduction of new e-car rent concept in Bratislava, which is on the right move towards achieving the eco-advantage. However, there is still space to improve the company's position on the KSFs, which are determined as: easy access to green products, their financial affordability, eco-friendliness and efficiency, appropriate communication and eco-awareness.

To summarize and enclose the analytical part of the thesis the SWOT analysis will be used, which is to outline the strengths and weaknesses of the focal company Volkswagen Slovakia and its operations with regard to the sustainable mobility and sustainable development concept as well as its opportunities and threats stemming from the company's external environment.

Table 3: SWOT analysis of VW SK from the sustainability viewpoint (Source: Own-processed)

Strengths	Weaknesses
Production capacity and skilled workforce for hybrid and electric vehicles production	Unsatisfactory ratio of price and range of VW e-up! comparing to the main competitor
The longest experience with hybrid and electric vehicles production of VW group	No ambition to develop the infrastructure of charging stations
Low delivery time comparing to the main competitor	Dependency on expensive cells for Li-Ion batteries from a supplier
Strong marketing and brand name	Harmed good-will after Dieselgate

Well-defined new market space (up! city)	Low control over the outsourced production of components for batteries
High eco-efficiency of the factory	
High variety of eco-efficient vehicles	
Opportunities	Threats
Lower costs of batteries in case the demand for electromobiles rises	Potential introduction of fees for charging at public charging stations
Insufficient and low-standard public transport, insufficiently built cycle lanes in the city centre of Bratislava	Quicker technology development of current competitors resulting in lower prices and higher range of their sustainable products
Increasing or unstable oil prices	Rapid development of Tesla supercharger network in Europe
Efforts of Bratislava and other large cities to become smart and sustainable	Questionable future decisions of the headquarter about the product range of VW SK with respect to the recent strike of employees
Sustainable life-style is becoming more and more popular	Competitors bringing new efficient sustainable mobility solutions
	Asian car producers entering the European market with cheap e-vehicles

According to the evaluation of factors of the SWOT analysis (see Appendix C), the most important strength of VW Slovakia is the ability to define a new market space in the sustainable mobility industry. This is currently represented by the project 'up! city', which shifted the focus of the company from the automobile production to the mobility service. Another strengths with the high weight are the wide portfolio of eco-efficient vehicles produced in the factory, overall eco-efficiency of the factory, its production capacity and skilled workforce for electric and hybrid car production and lower delivery time of electric cars comparing to Tesla as the main competitor in the industry. The major weaknesses are the hurt goodwill after Dieselgate and dependency on components for batteries from a supplier, which lifts the price of electric cars up. Both are from a big part

a matter of the whole VW Group. Furthermore, it is an imbalanced ratio of price and range of VW e-up! and no initiative to boost the network of charging stations, which are both significant weaknesses especially in comparison with the strategy of Tesla.

From the evaluation of opportunities it is apparent that insufficient public transport and conditions for other transport solutions in Bratislava and possibly in other cities is an important opportunity for VW Slovakia in the sustainable mobility industry, which corresponds with the current shift to mobility service providing. This is also related to efforts of Bratislava and other cities to become sustainable and improve the efficiency of transport. The trend of a sustainable life-style is also a significant opportunity as it might increase demand for sustainable mobility solutions as well as for electric cars. This could also lead to lower costs of batteries, which as stated before is one of the major problems. The threat that might influence the company most is a prompt reaction of competitors bringing new sustainable mobility solutions as well as their quicker technology development, which would limit VW Slovakia's market share. Another important factor is a potential introduction of fees for charging electric vehicles at public charging stations, which might negatively influence demand for electromobility and their usage in general. Moreover, the recent strike in VW Slovakia might cause that the headquarter will be more careful about the future decisions regarding the production in the factory and this could change its important position within the Group.

All these factors can influence the company's competitiveness in the sustainable mobility industry and its position among current and new competitors. In the following chapter several recommendations will be given to secure or improve this position, eliminate the weaknesses, utilize the opportunities and avoid the threats.

3 RECOMMENDATIONS

Based on the analytical part there are several recommendations provided in this chapter that could help improve position of VW Slovakia on KSFs and achieve the eco-advantage. On one hand they should boost sales of electromobiles and support electromobility in general. On the other hand they focus on new ways of transport and usage of eco-efficient vehicles. There are four suggestions provided and further explained in this chapter: invest into development of the charging stations network, set up a new VW car-sharing service, lobby for a higher government support of electromobility and set-up a joint-venture for Li-Ion batteries production. In particular, the recommendations lean on the highest weighted factors from the SWOT analysis. The focus is put especially on following assumptions:

- the recent shift of the company to a new area of sustainable mobility services can be further developed to take the stated opportunities – inefficiency of the public transport in Bratislava, tendency of large cities to become sustainable and changes in life-style in favour of sustainability;
- the significant predispositions of the factory to assemble electric and hybrid vehicles can be utilized and simultaneously weakness such as harmed good-will and no engagement in charging stations network development can be eliminated by support of electromobility. This is overlapped with the trend of sustainable life-style and possibility to reduce the costs of components for Li-Ion batteries as well as it can face the threat of fees at public charging stations;
- the company's dependency on expensive components for Li-Ion batteries and unsatisfactory price-range ratio of VW electric vehicles can be eliminated simultaneously with the threat of quicker technology development of competitors.

All below suggested recommendations are formulated with respect to the theoretical approaches provided in the first chapter. Specifically, they are based on the three-dimensional framework of sustainability and the Upside and Downside eco-advantage framework. They are composed to bring the value for customers, taking into

account all four dimensions of the value. Their implementation should contribute to creation of the enterprise perspective model, which builds upon win-win strategies and service to society.

3.1 Invest into development of the charging stations network

As it is emphasised in the analytical part, the possibility to charge an electric car is a very important factor that has an impact on potential customers' preferences when thinking about such mobility solution. Because the infrastructure of charging stations is insufficient in Slovakia and surrounding countries, VW Slovakia as one of the main electric and hybrid cars producers of VW Group could invest to boost the growth of this network and this way support its sales of electric and hybrid cars. Furthermore, Tesla has been planning and realising a rapid development of its supercharger network and this makes Tesla electromobility more competitive on the market.

In Slovakia the company could install approximately 5 superchargers located at several stations on the way from Bratislava to Košice. Additionally, several charging stations could be installed in smaller towns around large cities in Slovakia so that it is possible to drive a longer distance without being worried about running low on energy. The best option would be charging stations with solar panels collecting the solar energy which are already installed for example by Gläserne Manufaktur of VW in Dresden. This would enhance the purpose of electromobility to be truly sustainable, which requires not only the zero emission driving but also usage of the clean energy from renewable resources. Users of electric cars could charge their vehicles for free, independently from public charging stations. The negative aspect of this is the fact that also competitors' electric vehicles with the same type of the plug could be charged at these stations and this proposal would bring no direct financial reward to the company. However, it would be beneficial from the marketing point of view as it would connect electromobility with the VW brand more and it could help regain the goodwill.

3.2 Set up a new VW car-sharing service

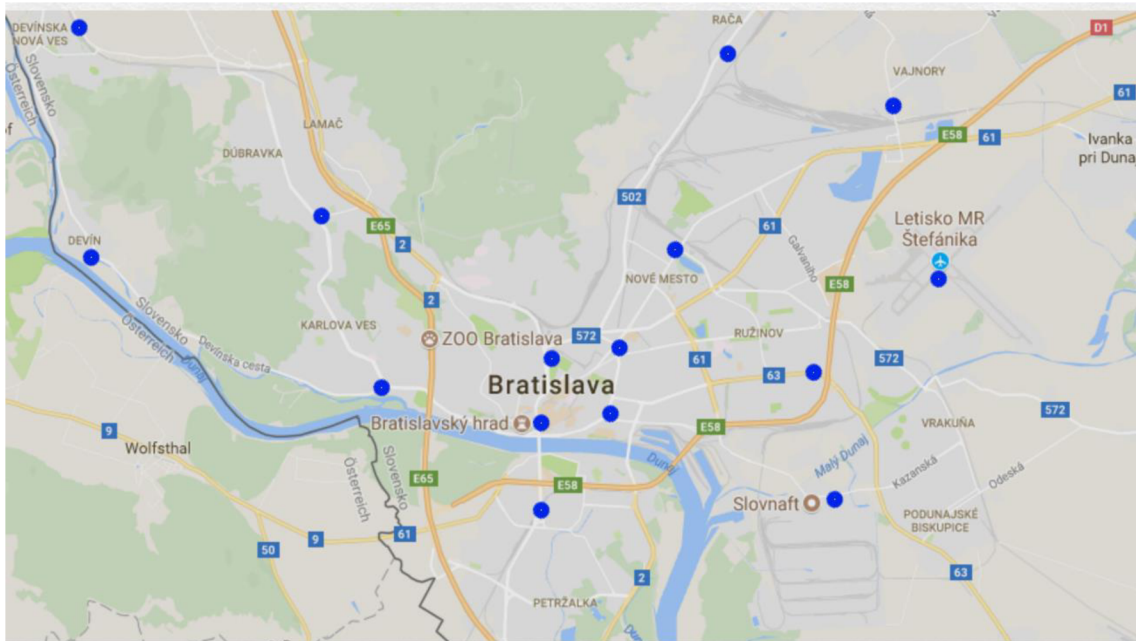
In connection with the currently starting project of electric car rent in Bratislava city centre, VW Slovakia could itself or in cooperation with an external company launch a car-sharing service in Bratislava and later in other cities in case the project is successful. Comparing to car rent, car-sharing would be even more flexible way how to satisfy individual mobility needs as customers would not pay for the whole day but only for the real time of the use of a car. This would be a more appropriate solution for people who need a car for regular shorter journeys to work and back and for the rest of the day the car would be useless for them. Basically, car-sharing would give people a possibility to use an electric car anytime they need it without having to buy it or dealing with parking problems in the city centre.

This project would help solve several problems, apart from the above mentioned problem with lack of parking spots in the city centre there is also a worsening situation in several city areas that are overfilled with cars. In the long term, car-sharing might eliminate the amount of cars in Bratislava and return the city centre to people, which would fulfil the ecologic and social aspect of sustainability. This might seem to be against the effort of VW Slovakia to produce as many vehicles as possible, but the fact is that the concept of car-sharing of electric cars has been already well developed and has gained popularity in several European large cities including Vienna. Therefore it is a matter of time until this concept is introduced in Bratislava as well and VW could benefit from being the first on the market. As it is a sustainable project, it is likely to gain favour and support of the city council and it is possible to apply for the co-financing from the European Funds. Nevertheless this project would be fully in compliance with the current corporate strategy of VW AG and its new brand MOIA focused on the sustainable mobility.

This car-sharing project could at its initial stage use for its purpose 20 e-up!s that would be available at 15 different places in Bratislava, whereby their highest concentration would be in the city centre (their suggested location is imaged by blue points in the Picture 9). At each of these spots at least 2 superchargers would be installed

and a user could pick up and leave the car at any of them. A customer could start using a car immediately if it is available at a particular car-share spot or it would be possible to make a reservation in advance for a certain time. For reservation of vehicles, their take-over, payments, personal account browse and journey planning the webpage and smartphone application would be developed. This application would also suggest ride shares with other users, which would on one hand require some more planning of a journey, on the other hand it would enable users share costs and make traveling even more efficient.

Payments for the car-sharing service would be always cashless, the actual amount of money would be withdrawn directly from a user's bank account. The price of each ride would be dependent on two factors – its time duration (calculated per 15 min) and driven distance (calculated per 1 km). Users would also pay symbolic monthly payments as membership fees, whereby every new user would have a possibility to try the car-sharing for one month with no obligation to pay this fee. Permanent customers would be charged a lower price so that they are motivated to use the car-sharing on a long-term basis.



Picture 9: Suggested location of first 15 car-share checkpoints in Bratislava (Source: Own-processed according to Google Maps)

To achieve a higher popularity of the car-sharing and be able to cover a weaker demand in the middle of the day out of the prime time, VW could try to partner with big companies operating in Bratislava that need to ensure the mobility of their employees. Instead of company cars or taxi they could use e-up!s for their daily business rides. In such case VW would have to adapt to needs and requirements (e.g. frequency of employees' business trips) that might differ depending on a particular partner company. In case there is no car-sharing station with superchargers near a company seat, it would be installed and equipped with an adequate amount of chargers and cars according to requirements agreed by both companies. Contractual terms and conditions for companies would be different from those for individuals and in particular such contracts would be concluded for a longer time period given in years. Tariff rates in B2B would also vary, comparing to B2C they would be lower.

From the financial point of view this project would require initial and regular investments into charging stations and their service, buy and lease of landed properties for car-share checkpoints, development of the application and last but not least investment into the e-up!s, which would be however much lower for VW than for other companies as it would obtain them for the value of production costs. Some financial resources should be allocated also to payment of wages to few employees responsible for smooth functioning of the car-sharing. The number of employees would increase with growth of the project and signing contracts with new partners.

Running the car-sharing could enhance the hurt reputation of VW Slovakia as it would support its new sustainable way of doing business. It would bring a sustainable solution to several problems in Bratislava and other cities so the probability the project would be successful is high. However, car-sharing in Slovakia deals with one major obstacle, which is represented by the materialistic national mentality that prefers owning things than sharing them. In general, it remains questionable how long it will take people to change this way of thinking and adapt to the current trend of sharing. But taking into account the fact that in Bratislava, especially in the city centre, sharing an e-car might be more comfortable and affordable for a user than owning it, it is likely to become attractive soon.

3.3 Lobby for a higher government support of electromobility

Electric cars are generally twice as expensive as combustion engine cars which makes them unattractive for majority of people in Slovakia and other middle European countries in spite of their eco-friendly character. In Northern European countries the expansion of electromobility has been partially the result of a significant government support in the form of subventions and tax allowance for e-car orders. For example, in Norway there is no obligation to pay any taxes including road tax. Owners of e-cars do not have to pay motorway fee and parking in cities is free. Comparing to gas powered cars, electric cars have many advantages and simultaneously combustion engine cars are disadvantaged in many aspects, financially and non-financially. These government measures ensure that e-cars are more competitive in a particular market and it is in interest of state to increase demand for e-cars, which helps prevent from further pollution.

To create such an advantage for e-car owners in Slovakia the government should not only provide them with subventions but it should also ensure that they have a priority position in the traffic and their traveling is as efficient as possible. This way people might start thinking about electric cars not only in sense of an ecologic mobility solution that might be also cost efficient in the long term. It would bring them an extra value if the government and city council enabled free parking, driving in bus lanes or accessing areas where only taxi and the public transport are allowed to operate. Such advantages would help people avoid being stuck in the traffic every day and spend less time by traveling, which is for many people a strong argument to buy an electric car. VW Slovakia could therefore try to negotiate a better support of electromobility with the government. On one hand, if the negotiations were successful, it might result in higher demand not only for VW e-cars, but also for competitors' e-vehicles. On the other hand, such actions would contribute to creation of a sustainable environment.

From the viewpoint of the government the increase of demand for electric cars would mean growth of production of VW Slovakia and overall prosperity, which would open new possibilities for further investments in the plant. This would also reflect in growth of the country's GDP as the company is one of the main contributors to GDP

creation and employment in Slovakia. However, it is difficult to evaluate, to what extent this suggestion is likely to bring any success and due to lack of information it is impossible to say if similar negotiations took place in the past.

3.4 Set-up a joint-venture for Li-Ion batteries production

As it has been already several times emphasised, one of the main problems of electric vehicles produced in VW Slovakia but also in other factories is the high price of batteries and especially of supplied components for these batteries. Therefore it could be beneficial to develop own cells and produce the batteries in big amounts to both achieve a higher capacity of batteries and their lower price. To cut the costs of the necessary research and development and increase the production amount, this could be realised by a joint-venture with a competitor having similar interests in production of e-vehicles.

On one hand, this solution would be very costly in its initial phase and it is also accompanied by a high level of risk. Its benefits would be shared with a competitor, whereby it would be complicated to find an appropriate partner. It is also necessary to point out that the whole decision-making process and potentially the realisation of this proposal is in this case the matter of the VW headquarter, not VW Slovakia. On the other hand, this suggestion targets the problem of the high price and low range of VW e-up! and in case of the joint-venture being successful the newly developed and produced batteries could be a base for any VW electric car. This would make the company's electromobiles more competitive with the main competitor in the industry Tesla. In the long term, the project is expected to bring the investment return and its financial benefits would be a result of a higher attractiveness and demand for e-vehicles of VW Slovakia as well as other VW subsidiaries. According to the current situation produced batteries would be utilized especially in VW Slovakia and in Germany. Moreover, this proposal corresponds with the new strategy of VW AG.

3.5 Summary of the recommendations

In this chapter four different proposals have been given to help create better conditions for electromobility and support the growing demand for e-vehicles of VW Slovakia. They have been suggested with respect to the current situation, trends and the company's possibilities within the frame of VW Group. VW Slovakia as the producer of e-vehicles should develop the network of charging stations to enable people driving outside cities and it could use its strong position to negotiate better e-mobility support from the side of government. It also fulfils all requirements to create a successful car-sharing concept. In the wider context VW could initiate the establishment of a joint-venture focused on development and production of Li-Ion batteries. Most of these recommendations are focused on the Slovak market, but they are applicable also in other European countries (apart from lobbying for the government support). The last one is the matter of the whole VW Group, therefore having an international impact. All four of them are evaluated according to five different aspects (time duration, risk of the option causing negative effects to the company, impact on the target group, party effected by the option and the level of required investment), which is presented in the table below. Focusing on the e-mobility and diversifying into new sustainable mobility solutions could help VW Slovakia utilize its strengths and take the current opportunities to build an eco-advantage. This would have not only the local impact but it would enhance the company's international competitiveness.

Table 4: Evaluation of the recommendations (Source: Own-processed)

Options Factors	Chargers network development	Car-sharing	Government support of e-mobility	Own batteries production
Time duration	short-term	mid-term	mid-term	long-term
Risk	low	medium	low	high

Impact	medium	high	medium	high
Effected group	individuals	individuals and businesses	government and individuals	individuals
Investment required	low - medium	medium - high	no	high

CONCLUSION

The sustainable development has been lately not only a trend that vanishes, but it in many cases it is crucial for a company's current and future competitiveness. If a company does not react on this shift towards sustainability it might lose its attractiveness. On the other hand, firms taking it as an opportunity and necessity for the society might achieve an eco-advantage, if the sustainability becomes a driving factor of their strategies and daily operations. The application of the sustainability concept should exceed the level of CSR and companies should be careful not to use practices of greenwashing. Truly sustainable business models are those that do not focus on their own profits and self-interests, but they create the value for consumers and care about prosperity of all elements in their network including employees, suppliers, intermediaries and in specific cases also competitors. The prosperity should not have only the economic character, but it should be integrated with the social and ecologic dimension of sustainability.

In particular, VW Slovakia as the focal company was for the purpose of this master's thesis set into the sustainable mobility industry, which includes apart from sustainable cars production also other clean transport solutions. VW Slovakia is one of the most eco-efficient factories of the VW Group and has the longest experience with hybrid and fully electric cars manufacturing. Lately it has also started a new project of e-car rent, which is an important strategic step towards sustainable mobility. VW Slovakia appears to have predispositions to be successful in the industry, however, there are still areas that limit the company's growth and therefore could be improved. As the outcome of this diploma thesis several proposals were given that are believed to enhance the company's competitiveness, all composed within the concept of the sustainable development. Those are the engagement in charging stations network development, increase the company's activities in sustainable transport services by the set-up of car-sharing, raising efforts to negotiate a higher governmental support of electromobility and initiate a joint venture for development and production of batteries for electric vehicles. The stated proposals are applicable separately as well as they can be combined to multiply their impact. With regard to its high potential impact and contribution for the society as

well as for VW Slovakia the concept of car-sharing seems to be the most appropriate for an immediate implementation.

To conclude, this diploma thesis analysed the automotive company from a different perspective and evaluated its strategy from the sustainability point of view. The provided recommendations should enhance the ability of the company to succeed in the sustainable mobility industry as well as they help create the image of a sustainable company. This way the sustainability concept can be utilized in favour of the company to support its competitiveness on the Slovak market, but also internationally. Accordingly, the goal of this diploma thesis was fulfilled and it is now up to the company to act and optimize its strategy to be in compliance with the changing environment.

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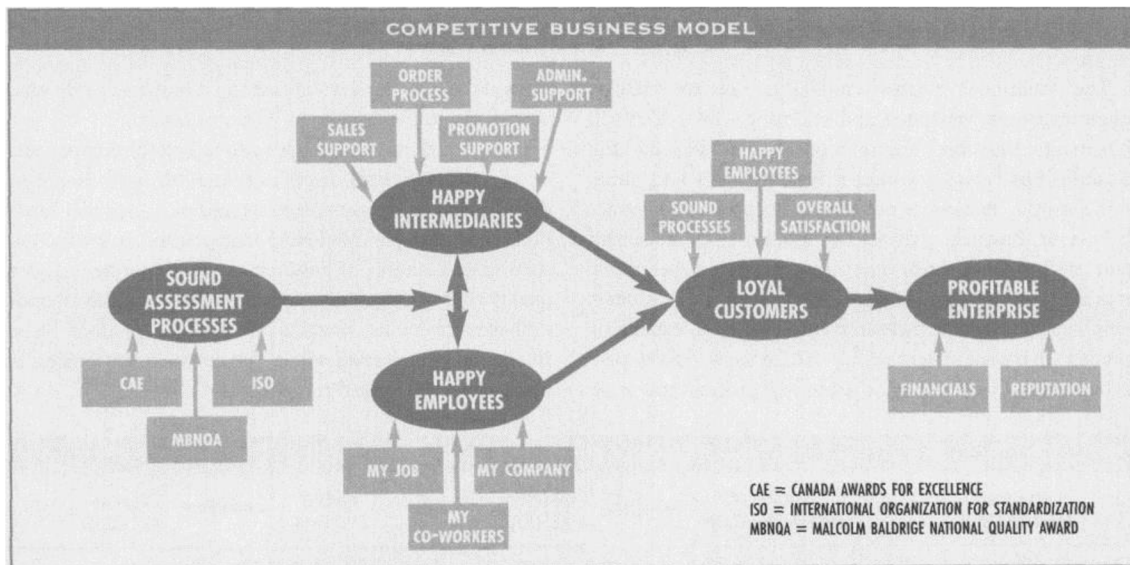
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APPENDICES

Appendix A



Picture A: Competitive business model (Source: Mayo & Brown, 1999)

Appendix B



Picture B.: Volkswagen AG's Strategy 2018 (Source: VW AG, 2016)

Appendix C

All factors of the SWOT analysis are further evaluated and compared with other factors within the same category. By this comparison the scale of numbers 0 – 1 is used (0 representing no importance comparing to another factor; 0,5 as the same importance and 1 as a certainly more important factor). The score of each factor is counted at the end of the line in the column Count. Afterwards, the weight of each factor was calculated, whereby the result is given in percentage.

Table C₁: Evaluation of strengths (Source: Own-processed)

Compared factors	Production capacity and skilled workforce for hybrid and electric vehicles production	The longest experience with hybrid and electric vehicles production of VW group	Low delivery time comparing to the main competitor	Strong marketing and brand name	Well-defined new market space (up! city)	High eco-efficiency of the factory	High variety of eco-efficient vehicles in portfolio	Count	Weight (%)
Production capacity and skilled workforce for hybrid and electric vehicles production	X	0,75	0,5	0,5	0,5	0,5	0,5	3,25	15,5
The longest experience with hybrid and electric vehicles production of VW group	0,25	X	0	0,25	0	0	0	0,5	2,4

Low delivery time comparing to the main competitor	0,5	1	X	0,5	0,5	0,5	0,5	3,5	16,7
Strong marketing and brand name	0,5	0,75	0,5	X	0,25	0,25	0,25	2,5	11,9
Well-defined new market space (up! city)	0,5	1	0,5	0,75	X	0,75	0,5	4	19,0
High eco-efficiency of the factory	0,5	1	0,5	0,75	0,25	X	0,5	3,5	16,7
High variety of eco-efficient vehicles in portfolio	0,5	1	0,5	0,75	0,5	0,5	X	3,75	17,9

Table C₂: Evaluation of weaknesses (Source: Own-processed)

Compared factors	Unsatisfactory ratio of price and range of VW e-up! comparing to the main competitor	No ambition to develop the infrastructure of charging stations	Dependency on expensive cells for Li-Ion batteries from a supplier	Harmed good-will after Dieselgate	Low control over the outsourced production of components for batteries	Count	Weight (%)
Unsatisfactory ratio of price and range of VW e-up! comparing to the main competitor	X	0,5	0,5	0,25	0,75	2	20
No ambition to develop the infrastructure of charging stations	0,5	X	0,25	0,25	0,75	1,75	17,5
Dependency on expensive cells for Li-Ion batteries from a supplier	0,5	0,75	X	0,5	1	2,75	27,5
Harmed good-will after Dieselgate	0,75	0,75	0,5	X	1	3	30
Low control over the outsourced production of components for batteries	0,25	0,25	0	0	X	0,5	5

Table C3: Evaluation of opportunities (Source: Own-processed)

Compared factors	Lower costs of batteries in case the demand for electromobiles rises	Insufficient and low-standard public transport, insufficiently built cycle lanes in the city centre of Bratislava	Increasing or unstable oil prices	Efforts of Bratislava and other large cities to become smart and sustainable	Sustainable life-style is becoming more and more popular	Count	Weight (%)
Lower costs of batteries in case the demand for electromobiles rises	X	0,25	0,75	0,5	0,5	2	20
Insufficient and low-standard public transport, insufficiently built cycle lanes in the city centre of Bratislava	0,75	X	1	0,75	0,75	3,25	32,5
Increasing or unstable oil prices	0,25	0	X	0,25	0,25	0,75	7,5
Efforts of Bratislava and other large cities to become smart and sustainable	0,5	0,25	0,75	X	0,5	2	20
Sustainable life-style is becoming more and more popular	0,5	0,25	0,75	0,5	X	2	20

Table C4: Evaluation of threats (Source: Own-processed)

Compared factors	Potential introduction of fees for charging at public charging stations	Quicker technology development of current competitors	Rapid development of Tesla supercharger network in Europe	Questionable future decisions of the HQ about the product range of VW SK	Competitors bringing new efficient sustainable mobility solutions	Asian car producers entering the European market	Count	Weight (%)
Potential introduction of fees for charging at public charging stations	X	0,5	0,75	0,5	0,25	0,75	2,75	18,3
Quicker technology development of current competitors	0,5	X	0,75	0,75	0,25	1	3,25	21,7
Rapid development of Tesla supercharger network in Europe	0,25	0,25	X	0,5	0	0,75	1,75	11,7
Questionable future decisions of the HQ about the product range of VW SK	0,5	0,25	0,5	X	0	0,75	2	13,3
Competitors bringing new efficient sustainable mobility solutions	0,75	0,75	1	1	X	1	4,5	30
Asian car producers entering the European market	0,25	0	0,25	0,25	0	X	0,75	5