Chance or burden?

A study of sustainable business models within the automotive industry

An empirical analysis of BMW Group and Volvo Car Group

Niklas Christiansen, Elias Strobel
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Thank you!

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Abstract

In the upcoming years, our society and economy will face enormous challenges due to global warming, which is caused by the emissions of carbon dioxide and other global-warming gases. Due to its high share of CO$_2$ emission, the detrimental role of the automotive industry has recently been put into the spotlight of the public discussion. Thanks to a growing public awareness of climate change and the pollution caused by vehicles, there is now a call for action towards a more sustainable business approach by car manufacturers.

The objective of this research is to investigate the actions taken by car manufacturers to meet these demands and to reveal the driving forces of this transformation. This will be done by an empirical analysis of qualitative data from two of the main companies in this sector, namely the BMW Group and the Volvo Car Group. The data comprises interviews with representatives of the two car manufacturers together which is combined with their non-financial reporting. Furthermore, this study presents the relevant scientific literature on business models. This combination of theoretical and empirical evidence will allow us to shed light on whether sustainability is a chance or a burden for car manufacturers.

The results of our empirical analysis show that a sustainable business model is a chance for car manufacturers to gain a competitive edge against their competitors and thereby ensure their long-term survival. More specifically, a higher sustainability can lead to cost savings in production, new value propositions in marketing, and new revenue models overall. However, the transformation to sustainable business models also poses several challenges for the companies. Nonetheless, in summary, sustainability in the context of business models is more of a chance than a burden.

**Keywords:** Sustainability, automotive industry, business model, sustainable business model, UN SDG, European Union
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<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ACEA</td>
<td>European Automobile Manufacturers Association</td>
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<td>AD</td>
<td>Autonomous Driving</td>
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<td>B2C</td>
<td>Business to Consumer</td>
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<td>CEO</td>
<td>Chief Executive Officer</td>
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<td>CO₂</td>
<td>Carbon dioxide</td>
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<td>CSR</td>
<td>Corporate Social Responsibility</td>
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<td>ETS</td>
<td>EU Emissions Trading System</td>
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<td>EU</td>
<td>European Union</td>
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<td>ILO</td>
<td>International Labour Organization</td>
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<td>ISO</td>
<td>International Organization for Standardization</td>
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<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>NGO</td>
<td>Non-governmental Organisation</td>
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<td>NOx</td>
<td>Nitrogen oxides</td>
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<td>OEM</td>
<td>Original Equipment Manufacturer</td>
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<td>SBM</td>
<td>Sustainable Business Model</td>
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<td>SDG</td>
<td>Sustainable Development Goals</td>
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1. Introduction

“I want you to panic like your house is on fire […]”
Greta Thunberg, Swedish climate activist at the World Economic Forum 2019

In recent years, the social and environmental challenges which humanity is facing have constantly increased. For instance, many scientists warn that the increasing depletion of natural resources, the huge emission of greenhouse gases, and progressing deforestation could soon lead to a tipping point which will have devastating effects on humanity and our planet in general (Haupt, 2012; Hoegh-Guldberg et al., 2018; Steffen et al., 2018). Hence, “[…] it seems increasingly apparent that business as usual is not an option for a sustainable future” (Bocken et al., 2014, p.42).

This call for change has recently also been voiced by the general public and many other actors of the political landscape. For instance, the Greta Thunberg started the Fridays for Future movement which demands more drastic measures from our politicians to combat climate change. However, it is also clear that politics alone will not be able to solve this global problem. It also requires the active participation of individuals and businesses. For instance, every single individual could develop a more sustainable lifestyle by reducing or avoiding activities which are detrimental for the environment, such as long-distance flights, cruises or excessive car use. In line with that, firms could also contribute by transforming their businesses to make them more sustainable. This could be achieved by reducing waste, energy consumption, and pollution. Furthermore, their accountability does not end at the production process itself, it also involves the entire supply chain as well as the produced end product. Since the automotive industry is one of the main polluters, the public pressure is increasingly forcing them to transform their business models towards more sustainability.

This thesis sheds light on this transformational process by analysing it from the theoretical and practical perspective. First, it presents the relevant literature in the field of sustainability and automotive manufacturing. Second, it contributes to the existing research by a methodological part which presents empirical data on two car manufacturers, the BMW Group and the Volvo Car Group. The two selected car manufacturers are chosen due to their leading role in innovation and environmental-friendy technologies. Furthermore, their location allows the authors to study the common EU legislation by comparing its implementation on the country levels. The data consists of interviews with representatives of the two car companies. These interviews are then analysed in order to answer the research question how sustainability is integrated in the business model of car manufacturers. The thesis tests the hypothesis that manufacturers are acting in self-interest and only fulfil the required legislation and do not have a huge interest to overachieve it. To test this hypothesis, the authors conducted an interpretative content analysis which intends to uncover the driving forces within the automotive industry, study the steps made by the two respective car companies to become more sustainable and to outline potential best practices for a completely integrated sustainable business model concept within the automotive industry. However, the thesis does not aim to criticize the two companies’ business approaches.
The structure of the thesis is as follows. The remaining part of chapter one presents the relevant literature on sustainability and the automotive sector. Based on that, it identifies a research gap and formulates our research question. Chapter two introduces theoretical concepts of sustainability and presents regulatory frameworks on sustainability on a global, EU-wide, and nation-wide level. Chapter three presents the methodology of our research. In chapter four, the empirical findings are presented, which are then analysed and discussed in chapter five. Chapter six concludes our study by summarizing our main findings and suggesting avenues for further research.

1.1. Background of the problem

The global population – and at the same time their living standard – are growing which leads to an increased consumption of goods and resources. The exploitation of our natural resources and hence the pollution is reaching a tremendous speed which causes unforeseen consequences shown through effects of climate change. In 2018, the Global Footprint Network hit the alarm at the beginning of August, because by then the resources available to humanity for 2018 have already been used up. That means that “humanity’s demand for ecological resources and services is exceeding what our Earth can regenerate in the same year” (Earth Overshoot Day, 2018). For comparison, 20 years earlier, in 1998, this tipping-point was still early October. Figure 1 shows clearly the increased speed of resource use over this period of time.

In 2018, humanity used 1.7 times our available budget on the above-mentioned earth capacity. Countries within the EU are hereby a major perpetrator, exceeding more resources than given. Sweden, for example, reached its Overshoot Day 2018 already on the 4th of April and Germany, as the largest economy within the EU, on the 2nd of May (Earth Overshoot Day, 2018).

The question is which sectors are causing the excessive ecological footprint and to what degree are these sectors transforming towards a more sustainable path. As statistics show, the automotive industry plays a crucial role, as the road transport is responsible for around 15% of greenhouse gas emissions within the EU (European Commission, 2019b).
Moreover, cars do not only produce enormous amounts of emission, but also many natural resources are used in their manufacturing process. Despite their detrimental role, politicians struggle to regulate the automotive industry, since it is responsible for more than 12 million jobs and a share of 4% EU’s GDP (European Commission, 2019a). This makes it an important sector, especially in a country like Germany in which it is a key driver for the economy. Since political interventions are unlikely to take place, it might be necessary that companies start by themselves to develop more sustainable business models. In fact, many companies already started to transform their business models to make them more sustainable. This thesis studies how sustainability is integrated in the business model of automotive manufacturers and what positive and negative effects this entails for them.

1.2. Current status of research

The topic of sustainability in the business model context has recently gained popularity as a research field so several research studies have been conducted (Bocken et al., 2014; Ritala et al., 2018; Schaltegger et al., 2016; Schaltegger & Wagner, 2011; Stubbs & Cocklin, 2008). The number of studies on this topic is likely to further increase since there have been several regulatory changes in this field which make further studies worthwhile. For instance, the EU directive 2014/95/EU for annual non-financial reporting became applicable in the year 2018. This directive enables researchers to use the common reporting standards as a basic reference point to compare organizational initiatives towards more sustainable business models on a European scale. In addition to the literature on sustainability, there has been an extensive amount of research on the automotive industry (Koplin et al., 2007; Mayyas et al., 2012; Wells, 2013).

1.3. Research gap

As the current literature on the automotive industry and sustainable business models shows, there has not yet been much research on the two topics combined. This lack of research is likely to be filled, since the automotive industry is increasingly held accountable for their negative role with respect to global warming. For instance, the Dieselgate of Volkswagen led to a public outcry and increased the pressure on car manufacturers to take actions to mitigate their environmental impact. This increased public awareness is likely to translate into more research in this field because the transformation process towards more sustainable business models needs to be guided by scientific research which outlines best practices and provides empirical evidence on how to transform businesses in this particular industry.

1.4. Research questions

While doing research on the theoretical framework of sustainable business models, the question occurs how they are actually applied in the business world. The theory on the topic of sustainability within a business context is highly controversial and so far, no coherent definition has been established among scholars. Furthermore, no structured guideline is provided on how to implement it in an organization. How can organizations include sustainability in their operations without a coherent academic framework?
Following the intensively discussed debate about environmental responsibility and action led us to develop a common theoretical framework on the basis of academic definitions and governmental legislation, outlined in Chapter 2. As the automotive industry is among others in the spotlight of the heated debate, the study conducted focuses on this specific industry. With outlining the relevant theoretical framework, the study aims to investigate the actual implementation of the widely diverse theoretical ground. An investigation on car manufacturers has let to adduce two leading car manufacturers within the European Union, BMW Group and Volvo Cars Group.

The main question which this thesis investigates is as follows:

- Is sustainability a chance or a burden in the business context of automobile manufacturers?

These are related questions which the thesis also answers:

- What is BMW’s and Volvo’s understanding of sustainability within their business context?
- What transformation steps have the BMW Group and the Volvo Car Group taken to implement sustainability in their business model?
- How do automotive companies tackle contradictions between sustainability and business?

The thesis aims to answer the above-mentioned questions by conducting semi-structured interviews with employees, responsible for sustainability in the two companies. The obtained statements are supported with additional material from the non-financial reports and webpage information.

1.5. Research purpose

The purpose of the research is to investigate the implementation of sustainable business models in the automotive industry. Based on the relevant theory and legislation, the authors’ aims are to disclose the true intention of sustainable efforts within the BMW Group and the Volvo Car Group. The two car manufacturers shall serve as object of study to infer factors for innovate business models to sustainable business models along with new business cases illustrating challenges and opportunities for the automotive industry and related industrial sectors. Moreover, the findings add to a better understanding of sustainable business models in practice and provide new evidence for future research.

1.6. Selected car companies

The automotive industry is highly affected by the changes related to sustainability. Two car manufacturers are often mentioned as exemplary innovators and market leaders in the field of sustainability. The companies described are the BMW Group, headquartered in Germany, and the Volvo Car Group, headquartered in Sweden. The selection is based on inquiries and relevance of the thesis topic.

Back in 2009 BMW established and implemented a Sustainability Board and corporate sustainability was declared as corporate target (BMW Group, 2018c). The organization
defines itself as “the most successful and sustainable premium provider of individual mobility” (BMW Group, 2018d, p. 11). Volvo for instance is mentioning: “Volvo Cars is committed to protecting and improving the environment and wider society, as well as the lives of our own customers and employees” (Volvo Car Group, 2018, p. 91).

The combination of the obvious and yet unresolved climate change, environmental as well as social challenges are crucial for examining two of the world's most successful automotive companies as examples of how to answer the research questions. Therefore, the different strategies and goals of the two companies are further explained below. Volvo's President and CEO Håkan Samuelsson commented on sustainability in the Annual Report 2018 as follows: “Our sustainable approach to business will continue to influence both our products and our operations. We will focus on minimising our environmental impact and taking social responsibility, while generating economic value. Our commitment and support for the UN Global Compact and to conduct business in a responsible manner remain strong.” (Volvo Car Group, 2018, p. 6).
2. Theoretical framework

This section describes the fundamental definitions of sustainability and regulations thereof. This theoretical basis helps the reader to understand the subsequent part of the thesis which analyses sustainable business models and their implementation strategies. Furthermore, it helps to compare the academic and legislative approach with the business practice.

2.1. Definitions

The academic understanding of the terminologies and concepts are essential for the further reading. The clarification of the definitions enables the reader to understand and distinguish the underlying terms and concepts used in the following chapters. It provides a comparable basis for the analysis, as the companies will describe approaches of business models and sustainability in the context of their individual endeavour and might leave out or redefine the terminology to their specific case. The definitions are the basis of this research and apply to all parts of the thesis.

2.1.1. Sustainable Development

Sustainability has no universally agreed definition. The World Commission on Environment and Development defined sustainable development at the United Nation Brundtland Commission in 1987 as followed (1987, p.16):

“Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Hereby the commission continued the description that it furthermore implies “limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities” (World Commission on Environment and Development, 1987, p. 16). The widely used basic definition provides a common ground, however the remaining ambiguity and openness for interpretation allow it to be used and adapted to diverse context but still involve a core set of guiding principles and values (Kates et al., 2016). The ‘Forum for the Future’ further defines it as “a dynamic process which enables all people to realise their potential and to improve their quality of life in ways that simultaneously protect and enhance the Earth’s life support system.”(Forum for the Future, 2019). The term sustainability has been established as a basic vocabulary within the daily linguistic usage and found applicable use in various context. The underlying principle however remains and allows to set a statement in terms of responsible behaviour. A more recent addition to the definition was made by the UN, with its initiative of Sustainability Development Goals. Here sustainable development seeks to achieve three pillars in a balanced manner: economic development, social development and environmental protection (UN General Assembly, 2010). These three pillars are often interlinked and affect each other. The thesis is nonetheless focusing on the pillars of economic development and environmental protection from a micro economic perspective. Hereby, it shows the consequences for specific companies and the automotive industry in general.
2.1.2. Business Model

The business model has gained popularity throughout the years and is nowadays an imperative conceptual tool for companies to describe their objective, design and architecture. Many scholars are using the concept without further explanation as they do assume a common understanding of the term (Zott et al., 2011, p.1022) but as Zott et al. (2011, p.1036) analysed its use, it is framed in different contexts and different concepts. While business models are an integral part of the economy for centuries, the business model concept known today emerged in the mid-1990’s with the rise of the internet. Since then various interpretations for business models accrued. Massa et al. (2017, p. 1) tried to entangle the complexity within the debate by differencing the perspectives. They distinguished three major interpretations of the meaning and function of business models: (1) business models as attributes of real firms, (2) business models as cognitive/linguistic schemas, and (3) business models as formal conceptual representations of how a business function”. This view allows the reader to sort the different expressed objectives by the later stated business plans. Especially if it comes to future layouts of plans, organizations practise different methods to express them.

In order to clarify the academic mean and definition behind, this research now exemplifies frequently used definitions. Geissdoerfer et al. (2018, p.402) define a business model as “simplified representations of value proposition, value creation and delivery and value capture elements and the interactions between these elements within an organizational unit” while Casadesus-Masanell and Ricart (2010, p. 195) formulate it vaguely as a reflection of the firm’s realized strategy. Zott and Amit (2010, p.219) identify it as “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities.” All definitions explicit or implicit highlight the value as core component of a business model. In addition to the definitions, a business model serves as performance assessment, analysis, communication and management tool and makes the business concept comparable to other businesses (Bocken et al., 2014, p. 43). A widely used design instrument to summarize and visualize the business is the business model canvas (Osterwalder & Pigneur, 2010). Core elements of the endeavour are stated, and as relevant factors described.

2.1.3. Business model innovation

The business model is now set in context to innovation to develop a better understanding of how businesses can transform it. Business model innovation is defined as conceptualization of a new model whether with addition to the current business model or a development to an entirely new business model. It therefore modifies the value of the business by its proposition, creation and delivery, and/or value capture (Geissdoerfer et al., 2018, pp. 405–406). The implementation of the business model innovation and the business transformation can be incremental or immediate.

Innovation can be stimulated through various forces. Some innovations are led by the customers demand, others are driven by technological developments. A third driving force for innovation, which incorporate the two above mentioned forces, is sustainability. It is extensively discussed among scholars (Geissdoerfer et al., 2018; Nidumolu et al., 2009; Schaltegger et al., 2012) and already found its practical legitimism. Nidumolu et al. (2009b, p. 57) for example quote that sustainability is right now even the key driver
of innovation. Questioning the current patterns and business practices can generate novel ideas which uncover potential markets and income sources.

The substantial increase of research on business models and its innovation within the past decade has led to significant industry’s attention and implementation. Particularly nowadays with the widespread awareness of a more sustainable living, companies are trying to innovate to satisfy the investors, lawmaker and customers desire. As previously mentioned, a business model is not solely describing the value the business creates, it additionally includes the structure of the business. A fundamental part hereby is to describe the chosen revenue model. Business models can generate revenue through different mechanisms. The most common is by selling a product. But even here various models are applicable. A famous example is the “razor-razorblade model” (Teece, 2010, p. 177) where the actual product is inexpensive while all consumables and extras are highly priced. Another method which get growing attention especially among car manufacturer, is the leasing service, where the actual product does not change ownership, it is only rented out for its use. Building on existing models is however not enough, but developing a differentiated and novel model is hard as it requires to be viable, effective and efficient (Teece, 2010, p. 180). Innovating the revenue method itself is therefore not enough for a lasting competitive advantage as these concepts are easily imitable. But in synergy with other innovations it can lead to a unique business model providing greater value and a profitable revenue stream.

2.1.4. Sustainable business model

The sustainable business development model (SBM) is a modification of the conventional business model concept. While the business model itself is only focusing on the value within an organization the sustainable business model incorporates the stakeholders in a broader sense. A great example is given by the previous mentioned business model canvas. This was further developed to a triple layered business model canvas to integrate the social and environmental concerns (Joyce & Paquin, 2016), picturing now the full sustainable business model. Wells (2013) defines the business model for sustainability with the principles of resource efficiency, social relevance, longevity, ethical sourcing and work enrichment.

The underlying factor of a broader stakeholder consideration is given by Evans et al. (2017, pp. 601-603) whose five propositions of sustainable business models are “1. Sustainable value incorporates economic, social and environmental benefits conceptualized as value forms. 2. SBMs require a system of sustainable value flows among multiple stakeholders including the natural environment and society as primary stakeholders. 3. SBMs require a value network with a new purpose, design and governance. 4. SBMs require a systemic consideration of stakeholder interests and responsibilities for mutual value creation. 5. Internalizing externalities through product service systems enables innovation towards SBMs.”. Deducted from the above-given definitions it can be summarized that SBM objective is to maintain the environment while improving the quality of life, which refers to the sustainable definition in the beginning. Bocken et al. (2014, pp. 49–54) hereby created a graph of archetypes (Figure 2) which provides a broad spectrum to distil useful sustainable business practices.
Figure 2: The sustainable business model archetypes (Bocken et al., 2014, p. 48)

The triple bottom line, initiated by Elkington (1998), is a model increasingly implemented in firms to control and measure its financial and furthermore its social/ethical and environmental performances; also known as the three Ps “profits, people, planet” (Slaper, 2011). The rising global challenges on sustainability increase the pressure on company’s responsibility and its role in the society. The collaboration with the key stakeholders is of great importance, and an autonomous operation is hardly viable (Bocken et al., 2014, p. 43). The theory of the triple bottom line highlights the importance of partnerships within the private as well as the public sector. These partnerships help to increase efficiency and help to foster a more sustainable business by mutual exchange, learning and trust (Elkington, 1998, p. 37). Researchers furthermore argue that a business model innovation towards a sustainable model is mitigating risks, leads to higher resilience (Choi & Wang, 2009) and creates additional heterogeneity and value co-creation opportunities (Nidumolu et al., 2009; Porter & Kramer, 2011). The holistic approach of a sustainable business model incorporates the economic profitability with the social welfare and natural assets which it requires. It rather maximizes societal and environmental benefits than pure short-term profits as it infers its purpose from a long-term perspective (Bocken et al., 2014, p. 44).

Contradicting the shareholder theory of Friedman (1970) that the social responsibility of business is to increase its profits, the sustainable business model perceives its responsibilities in a broader sense as it is embedded in the environment and therefore has a greater responsibility. The following subitem describing the corporate social responsibility which often refers to the sustainable business model. Many studies on CSR are actually rather related to sustainable business models than to the described
differentiation to CSR. The core concept to fully integrate social responsibility in a business strategy are in the thesis context key element of a sustainable business model.

2.1.5. Corporate Social Responsibility

Despite the importance and ubiquity of Corporate Social Responsibility (CSR) in today’s business it has no common theoretical fundament and is frequently associated with sustainable business model. Many see CSR as fully evolved sustainable approach and because of the controversial theory its business practice is widely divergent. Researchers so far have not found consensus on the definition and that makes it very challenging to distinguish CSR from the sustainable business model (Dahlsrud, 2008; van Marrewijk, 2003). Both have obviously many in common but nevertheless should be two different approaches. To distinguish CSR from the above-mentioned definition of sustainable business model, this section defines the conceptualisation and its implicit functions and use within the thesis context.

The terminology emerged in the 1950s by Bowen (1953), whose book *Social Responsibilities of the Businessman* addressed the executives to consider the business impacts on society. Its business use was long irrelevant or just a footnote for companies’ public appearance. However, the importance of CSR within the business world evolved by the internationalization of companies in the 1990s, where business practices were questioned by established institutionalized standards. With an increased global communication network and awareness for societal and environmental matters companies, often dubious, business practices were revealed, and their image denounced. To purge the reputation, firms had to rethink their ethics and started PR initiatives to address specific issues and demonstrate their social responsibility. Hereby companies resort to the conceptual but unclear framework given by researchers.

The literature provides several definitions on CSR (Dahlsrud, 2008; Sheehy, 2015; van Marrewijk, 2003). A widespread and practical definition for this thesis is provided by McWilliams and Siegel (2001, p.117) who “define CSR as actions that appear to further some social good, beyond the interests of the firm and that which is required by law.” It is a voluntary based initiative of companies, which is predominantly seen as a cost, a constraint or charitable deed (Porter & Kramer, 2006, p. 2) and not interlinked with the core of the business model. Either it is driven by pure altruism or by expectations and standards of society which are not yet translated in legal acts. This additional effort needs to be done by organizations to polish their image. In addition, Dahlsrud (2008, p. 5) has analysed the context of CSR definitions and came to the conclusion that they rather describe a phenomenon than providing guidance to solve the challenges. Nidumolu et al. (2009b, p. 57) summarizes the long established believe of most executives who “treat the need to become sustainable as a corporate social responsibility, divorced from business objectives.” This citation clearly underlines the divergence between the two terms and its association made among executives.

However, by an increased complexity of the topic, the borders between the two terms became indistinct. CSR developed from a voluntarily altruism-based standpoint and sustainable business model more from a business and legislative standpoint, they are nowadays merged together. The legal requirements are getting stronger, so are the forces to innovate, to first, meet the customer expectations and second, to have a unique market position. Especially the environmental standards are on a rise and companies who rest on
their previous achievements are now only fulfilling the governmental regulations. This development could explain the very blurry line between CSR and sustainable business models. Even scholars have difficulties to distinguish the two concepts from each other. Especially in the case where scholars analysed the linkage between corporate social performances and corporate financial performances (Carroll, 2015, p. 89). With the described definition of CSR, this contextual relation can be clearly allocated at sustainable business models and as the graph from Carroll (2015, p. 91) describes the development of CSR over the past 50-years, the future of CSR might lie in the fully evolved sustainable business model, which incorporates all the aspects emerged over time. With a fully integrated CSR approach, companies are capable to set the social and environmental aspects within their business context and generate a streamlined business model which allows their long-term survival.

2.2. Regulations of sustainability

The definitions of sustainability and business models provided in Chapter 2.1. are the fundament of this thesis. The authors consider the section below on regulations as one of the basis of sustainability because it is the overall framework that influence the operations of the firms and creates the boundaries in which the described theories are embedded. However, the regulations do not constitute the whole scope required to understand the theoretical approach. Nevertheless, an essential part for the economy is the legislative framework. The various influences on a company and its realization or implementation of sustainability principles are in many cases already prescribed by laws and regulations in a rough pattern. The various legislative authorities fundamentally control how organizations must consider sustainability matters. The United Nations, European Union and each national government has its own rules and regulations, but often interlinked and widely used by global companies to standardize processes and requirements. The following part describes the most relevant regulations for the thesis context and provide a guidance to which scheme it corresponds to.

2.2.1. United Nations

The United Nations (UN) operates as international organization to develop relationships and communication among its 193 member states. Its objective is to foster cooperation in order to combat economic, social, cultural or humanitarian issues. With its United Nations Environment Programme the UN is developing environmental standards and practices to improve people’s life and “serve as an authoritative advocate for the global environment” (UN Environment Programme, 2019).

The UN initiative of reaching the 17 Sustainable Development Goals (SDG) by 2030 is a blueprint for a more decent future for all and addresses the global challenges humanity face as for example on environmental and social matters. The developed goals were ratified by the member states within the Agenda 2030 and therefore are translated into regulations and acts. Not only governments, also companies are encouraged to commit and act towards the SDGs. Therefore, the UN initiated the UN Global Compact, which is the “world’s largest corporate sustainability initiative” with around 10,000 companies (UN Global Compact, 2019). Its objective is to embrace companies to align with its ten principles and support the SDGs by new business activities and business innovation. The principle-based framework is addressing topics of human rights, labour, environment and
anti-corruption. It possesses no regulatory power but serves as a forum for discussions and network between governments, companies and NGOs.

Furthermore, within the United Nations Framework Convention on Climate Change the UN achieved to adopt the Paris Agreement in 2016 which goal is to combat climate change. All parties commit to put their most considerable efforts to combat climate change and “keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels” (UNFCCC, 2018). The implementation of individual measures as well as the emissions produced have to be reported regularly. As indicated above the UN plays a crucial role for a global standardization of norms and goals and serve as a platform for dialogues.

2.2.2. European Union

As legislative institution the European Union (EU) can have an impact on the company’s implementation on sustainable matters. By outlining its competencies, goals and treaties the influence and driving force of the EU, in the thesis context, is analysed.

The EU has different competences. When it comes to the aspects of sustainability, the social, ecological and economic layers, it possesses numerous powers to conduct. Direct sustainable impacts and exclusive competences are trade-, competition- and conservation of marine biological resources related (European Union, 2012, p. 5). The EU moreover has shared the sustainable competences in the following fields: social policy; economic, social and territorial cohesion; agriculture and fisheries; environment; transport; trans-European networks; energy; public health matters; and areas of research, technological development and space (European Union, 2012, pp. 5–6). Lastly, the EU can have a supportive, coordinative or supplemented role on protection and improvement of human health; industry; and tourism (European Union, 2012, p. 6).
Now further, to understand the constitutional legal acts, it is necessary to unveil the five types of EU’s acts. First, the regulations, a binding legislative act which is mandatory for the member states to ratify. Second, there are directives. Directives represent goals which must be achieved; however, it is the state’s own decision in which way they will be accomplished. Third, decisions, these are binding to the one whom it is addresses. Fourth, the recommendations are non-binding suggestions which are providing a guideline without constitutional obligations. Fifth and last, the EU institutions give out opinions. These opinions aim to provide a viewpoint on certain matters, for a better understanding and the institutions perspective. This understanding of the EU acts should now provide a more precise picture on how the institutional treaties work and what obligation they impose.

To depict the relevant treaties, the most renown and impactful treaties are outlined in the following section. This allows to see and evaluate the EU’s driving force and impact on business sustainability.

The European Union committed to the UN 2030 Agenda with its 17 Sustainable Development Goals and therefore established several steps to achieve its objectives and implement it in the EU policies. Furthermore, the EU adapted the Paris Climate Agreement as integral part for the Sustainable Development Goals from the 2030 Agenda (European Commission, 2016a).

The EU also established an action plan (European Commission, 2017) describing how they want to implement the 2030 Agenda in the EU policies and EU institutions to establish a platform and reporting system to increase awareness and the ability to improve processes to a more sustainable society. This involves many regulations and directives but also none binding decisions, recommendations and opinions. With its focus on fostering a sustainable economy, the EU moreover provide direct and indirect financial incentives for innovative business solutions tackling the sustainability issue.

The growing interest of investors and customers about the companies’ sustainable performance induced the European Commission to the non-financial Reporting Directive 2014/95/EU (NFR Directive). The NFR Directive is a directive for large public-interest companies within the EU, above 500 employees, to disclose a non-financial statement in the management report “containing information to the extent necessary for an understanding of the undertaking’s development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters” (European Commission, 2014a). Additionally, it requires a brief description of the company’s business model, a description of the policies and its due diligence processes implemented and outcomes which pursue the mentioned matters, related non-financial key performance indicators and principal risks linked to the ongoing operations. The directive is implemented and binding from 2018 onward. The reporting is flexible in the way to disclose the relevant information. However internationally accepted reporting guidelines are encouraged to be used. The EU is hereby referencing to three institutional guidelines. The UN Global Compact represent such and provide a framework of sustainability reporting as well as a not binding commitment to the ten principles. The second guideline as such is the OECD annual report for effective implementation for multinational enterprises. The International Organization for Standardization (ISO), is the third referenced guidance, designed to aid corporations to comply with certain reporting obligations and regulations.
ISO 26000 provide guidance on how companies can operate in a socially responsible manner.

A second significant environmental regulation is the *European Union Emissions Trading System* (ETS), which was launched in 2005. It is a trade market for CO\(_2\) emissions. Its objective is to limit the emissions produced within the EU by the here operating companies. Every year the EU set a more inclining overall emission limit. Within this limit companies can then buy and sell allowances. Compared to the command and control regulations, this so called ‘cap-and-trade approach’ (European Commission, 2016b) creates an urgency of the company to find the cheapest way to reduce emissions and therefore creates an incentive for a more sustainable business. The ETS regulates in total around 45% of EU greenhouse gas emissions (European Commission, 2019c) and remain of its scope an unprecedented regulation tool in its kind (Ellerman & Buchner, 2008). However, it has only an indirect impact on the road transport, as it is excluded and therefore only affects it in relation of obtaining electricity and in the waste management. The EU and the member states are discussing about further development of its Directive 2004/35/EC (European Parliament and the Council of the European Union, 2004) on environmental liability with regard to the prevention and remedying of environmental damage. This could lead to more direct emission taxes on basis of the polluter pays principle. As largest greenhouse gas polluter in non-ETS industry, transportation possess a special focus on this discussion.

Commission Regulation (EU) 2018/1832 (European Commission, 2018) and directive Nr. 443/2009 (European Commission, 2014b) are directives which have significant direct impact for car manufacturers and owners. It established a more rigid maximal standard for CO\(_2\) emissions for light passenger and commercial vehicles and in addition aggravated testing procedures to prevent fraud. The purposes are to reduce the CO\(_2\) emissions emitted by cars by 2020 and encourage car manufacturers to invest in innovative and more environmentally friendly solutions. Recent discussions about a nation or even union wide implementation of a carbon tax in Germany and the EU could also rise the costs of produced emissions among companies and the end users. Sweden, for example, has already implemented a carbon tax which costs increasingly rise over the years and has proved the desired effects (Jamet, 2011).

The Commission furthermore, focus on global technical harmonisation for the automotive industry to reduce development costs which goes hand in hand with the doubled funding for the cooperative research and innovation for “green vehicles, decarbonisation of conventional engines, safety and information technology infrastructure” (European Commission, 2019b). In 2019 the European Parliament voted for the ban of single used plastic (Magazine Environment for Europeans, 2019), which portends further steps to eliminate plastic in general. Additionally, it initiated many more regulations and measures towards a more sustainable European Union.

### 2.2.3. National regulations

The state legislations on environmental and automotive regulations are within the respective countries steered predominantly by EU regulations. However, there are some legislations on state and municipality level which are more specified in its use and/or go beyond the given framework of standardized EU wide regulations. Related to the EU NFR Directive, Sweden went one step further and initiated the mandatory non-financial
reporting for private companies with 250 workers and more, compared with mandatory reporting for companies with more than 500 at the EU NFR (Justitiedepartementet, 2014). Sweden and Germany also introduced some regulations and tax incentives towards cleaner vehicles. Sweden implemented a bonus-malus tax system to incentivize and increase environmentally adopted cars with a reduced CO₂ emission (Regeringskansliet, 2017). A similar but not this far reaching approach has been made by Germany where the government introduced a reduced tax on electric and hybrid cars used as company and private vehicle (ZEIT ONLINE, 2018).

Furthermore, municipalities introduced all over Europe environmental zones where certain car types are banned entering city districts due to their poorly performing emissions and high air pollution. The objective of the environmental zones is to improve air quality at sensitive areas. Swedish municipalities, as one of the pioneers introducing environmental zones in the 1990s, has presently developed a national regulation which harmonizes the various requirements. German municipalities followed the approach and introduced similar environmental zones with a badge indicating the cars fine particles pollution. In total there exist by now 58 zones in Germany.

Grid expansion represent another element where countries can influence the market. Providing a dense and widespread grid to charge e-vehicles makes the use more attractive. Bologna reward people for cycling, walking or taking public transport with ice cream and beer. This unconventional way gained a lot of attention in media (World Economic Forum, 2018). While other municipalities offer free parking for e-vehicles. All these initiatives aim to incentivize more environmentally friendly ways and vehicles on the streets and therefore lay the foundation for car manufacturer to introduce new cars meeting these requirements.

Theoretical aspect within the research plays a crucial role for the understanding of the research question and validity of the findings. That is the reason why the authors have chosen to combine definitions and legislations under the theoretical framework chapter to give a comprehensive fundament for the following chapters. Theory and legislation are interdependent in the business context as it provides guidance along with limitations.
3. Methodology

The aim of this thesis is first, to contribute to the field of sustainable business models by summarizing the relevant literature and legislation, second to provide additional research result of the consideration and implementation of sustainability in companies. This is achieved by case studies of two renowned car manufacturers headquartered in Germany and Sweden. The thesis is based on a qualitative and abductive approach. The following chapter describes the methodology of it by outlining the design of the research, the type of interviews, the sample selection and the empirical data it uses.

In empirical research, a distinction is made between a qualitative and a quantitative approach (Flick, 2016, p. 41). Starting from the research question generated in the previous chapter, qualitative research was selected as the research direction. In order to justify this, the qualitative approach at this point is highlighted and delimited from a comprehensive understanding of the quantitative research direction. While qualitative research is aiming for understanding special characteristics and attributes on a subjective level, quantitative research instead focuses on objectivity as well as hypotheses about the relationships between various phenomena can be generated and verified in reality and measured in numbers (Raithel, 2008, p. 8). The methods of quantitative research are used when the determination of frequencies and distributions is the main focus. This contrasts with the use of qualitative methods when the researcher's intention is to capture subjective experience (Flick, 2016, p. 41). For this purpose, qualitative research is based on the individual case and not on representative samples. The goal is therefore not only to analyse complex relationships, objects or processes, but to understand them, to empathize with them (Mayring, 2015, p. 19).

Qualitative research also makes it possible to capture the full complexity of the research subject. Complex relations can therefore be deduced, which is not the case with a variable isolation, as found in a quantitative approach (Mayring, 2015). Additionally, this thesis is following the abductive approach to ensure that the described frameworks are verified through the non-financial report of the mentioned companies BMW and Volvo as well as through the gathered answers from the participants of the following interviews (Saunders et al., 2016, p. 145). The data collection of this academic work is used to identify the patterns in the theoretical frameworks and modify the existing theory while incorporating the empirical data into the mentioned theoretical basis to build a new or modify existing framework (Saunders et al., 2016, p. 145).

In order to delineate the iterative abduction process clearer, which means that it is neither only a process from theory to data (deduction) nor from data to theory (induction). Rather the approach of abduction, is iterations back and forth between deduction and induction (Suddaby, 2006 cited in Saunders et al., 2016, p. 148). “An abductive approach is fruitful if the researcher’s objective is to discover new things — other variables and other relationships. Similar to ‘grounded theory’, our main concern is related to the generation of new concepts and development of theoretical models, rather than confirmation of existing theory “ (Dubois & Gadde, 2002, p. 559). In 2014 the same authors (Dubois & Gadde, 2014, p. 1278) underline once again that the abduction approach is the combination of induction and deduction and it is important in the way of incorporating existing theories with gathered data as this thesis is structured.
In addition to this, the generated data from the interviews and the reports, mentioned, are complex and rich, which makes it possible to understand the complexity of sustainability and to meet the research question in its details. For the interpretation process the existing theoretical frameworks are supplemented with the annual reports along with the answers from the interviews (Saunders et al., 2016, pp. 148–149).

3.1. Design of the Research

According to Ragin (cited in Flick, 2009, p. 191), a research design "[…] is a plan for collecting and analysing evidence that will make it possible for the investigator to answer whatever questions he or she has posed. The design of an investigation touches almost all aspects of the research, from the minute details of data collection to the selection of the techniques of data analysis." The research design can be seen as the plan to achieve the goal of research by, among other things, summarizing and being equally determined by the theoretical framework, the question as well as the methods used or the resources available (Flick, 2009, p. 128). In the context of this thesis, a combination and comparison of the existing theoretical frameworks and the interview findings is used to answer the research question and show the resulting new findings. Interviews can be assigned to qualitative research methods and will be discussed in more detail below, so that the selection of the appropriate examination method can be justified (Mayring, 2016, p. 66).

The research instrument of the interview is described by Diekmann (2016, p. 439) as "a planned procedure with a scientific objective in which the subject is to be induced to oral information by a series of specific questions or given stimuli". Oral data is collected using this scheduled procedure. The interviewer and the interviewee relate to each other and in doing so "produce what is subsequently used as the content of the evaluation" (Helfferich, 2014, p. 561). In principle, a distinction can be made between the variants of the interview guide, narrative-generating procedures in the kind of narrative interview, and group-related procedures in which several people are interviewed at the same time (Flick, 2016, p. 269).

The methodological approaches to oral data are characterized by an openness towards the research subjects studied and the perspectives of the subjects, as well as by arrangements for structuring the data collection (Flick, 2016, p. 268). Between the two goals of openness and structuring, the methods move. While narrative interviews allow a substantial scope for the interviewee's stories through a strong openness and only a narrative request at the beginning, the thematic control is characteristic of semi-guided interviews. Since individual topics can be more specifically addressed in this kind of the interview, the method of the semi-guided interviews was chosen for this thesis (Flick, 2016, pp. 268–270). This also ensures that the interviewees perspective is focused on sustainability and if they are going further in their approach of sustainability or just meeting the regulations and legislations.

3.2. Sample selection

The first step of the sample selection was to decide which companies to include. This decision was based on two basic principles; be affected by the NFR directive and be part of the automotive industry. The principles aimed for a comparability of sampling. This is
given by a fundamentally homogeneity of the samples, here ensured through the same industry and same legislative framework (Teddle & Yu, 2007, p. 84). A second criteria was made on the automotive industry. Here the aim was to compare two car manufacturers, which are renowned for their innovation in the field of sustainability.

In order to find suitable participants for an interview, the websites of the companies, together with well-known directories such as LinkedIn, were searched. With the help of the keyword "sustainability", appropriate interviewees were contacted by e-mail. Furthermore, the authors of this work asked their own networks from previous experiences and studies for contacts into the automotive industry to find suitable interviewees. The appointments were made unbureaucratically via e-mail. For geographical reasons, the interviews, with the respective experts from the two companies were conducted by telephone or Skype and also recorded for transcription. Since the automotive industry in particular is facing drastic changes in the area of sustainability, finding suitable candidates to talk to in order to generate valid and reliable results has been a challenge. However, the authors intention of reasonable participants for the interview was to find interviewees with a decent professional level within the two companies in order to gather valid answers. The two companies have attached particular importance to discretion and therefore it is not possible to give names or exact job descriptions. The authors are aware of the fact that the high level of data protection can lead to an impression of a lack of transparency. However, in order to have an empirical basis, the authors have carefully selected their interview partners and considered a minimum career level.

For this research work two interviewees from BMW were acquired. In addition to that a double interview with two Volvo employees was carried out. Interviewing two Volvo representatives within one interview setting were an imperative requirement of the company. No further options were provided, and this would have led to no further interview appointment from their side. That was the result of our correspondents with the company. Agreed to these terms, the interviewers were aware of the changing conditions and did smaller adjustments to get both interviewees perspectives on the questions. All four interviewees were of German nationality. The nationality was not intentionally chosen, it occurred accidentally. The participants were selected by multiple criteria, for instance, individuals who can be telephoned; selected by company and specialization in the field of sustainability. The level of confidence that the right person is answering with the method of a telephone/Skype interview is ranked as ‘high’ for the selection process.

### 3.3. Interview setting

All interviews were conducted between the 2nd and 9th of May 2019 (Appendix 2). The timeframe of the interviews was 20 to 30 minutes, and thus the time and effort spent by the interviewees was appropriate and satisfactory for the questions worked out. A transcript has to be sent for approval to the interview partners from BMW and Volvo in order to use legally and ethically correct data. Since an interview is executed in a given framework, it is the natural way to use the answers in contextual correct and original form in the following analysis. For reasons of private policies, the record is deleted after the transcription. The authors mentioned and confirmed this in the not recorded-introduction part of the interviews. Out of confidentiality reasons the transcripts are not attached to this work either.
Additionally, to the earlier mentioned methodology this thesis is based on a telephone/Skype interview with semi-structured questionnaire and the following attributes considered. A semi-structured interview framework was chosen in order to provide the researchers some flexibility of topics and follow-up questions. Supplementary follow-up questions are added if appropriate and specific questions might be extended for a better understanding and greater data set for the following analysis and discussion. The additional asked questions are dependent on the given statements as well as the expertise of the companies’ representatives. To compare and combine the theoretical basis this research elaboration will be underlined through the named method of interviews.

The possibility that the interviewee is distorting or contaminating the questions is occasionally distorted or invented by interviewer. The feasible length of the interview is described as up to half an hour to not overwhelm the participant on the phone/computer.

Suitable types of questions are open as well as complex questions to get valid answers to prove or disprove the research questions. To enhance the respondent’s participation as well as guiding the respondent through the questionnaire and answering respondents’ upcoming questions it is important that the interviewer is alert and follows the interview (Saunders et al., 2009, p. 364). The interview guide is designed with own questions in order to ensure the right validity and reliability (Saunders et al., 2007, p. 374) and at the same time ensure the connection to the research question and the annual reports of BMW and Volvo. As a preparation for the analysis the gathered interviews were transcribed word by word (Saunders et al., 2007, p. 485). Additionally, the transcript is supported by personal notes that were taken during the interviews in order to understand the interviewee the right way at a later stage and asking request-questions if needed.

**Interview guide**

1. How would you define sustainability within your companies’ business context?
2. Which role does sustainability play within your business model?
   a) Did you experience any contradiction between sustainability and business?
   b) And if so, how did you tackle them?
3. What is the key driver for sustainability within your company?
4. Do you see regulations and stricter legislation aiming for a more sustainable business approach as burden or does they encourage you to make even further developments to overachieve the criteria?
5. How do you consider sub-contractors and suppliers to meet the requirements in terms of sustainability you have set within your company?
6. What aspects would you consider to be needed to transform the automotive industry to a sustainable business industry?
7. How do you see your company’s sustainability efforts compared to your competitors?

Based on the above-mentioned interview guide the empirical data was collected and assigned to categories for the following analysis in the next chapter. The categories of the analysis were developed from the theoretical frameworks in combination with the related questions. The following categories will now be used in the analysis to subsequently present a critical basis for a discussion.
• Contextual definition of sustainability
• Role of sustainability
• Sustainability contradicting business
• Key drivers for sustainability
• Requirements along the supply chain
• Requirements for transformation
• Chance or burden

3.4. Secondary data collection

Secondary data are data that “were collected initially for some other purpose” (Saunders et al., 2016, p. 316) and in this case the authors took the Annual Reports from 2018 in consideration of this work. The reports were published by BMW and Volvo on their webpages and found in their public database. The collected secondary data will be compared and set in context of the research findings (Saunders et al., 2016, p. 344) from the data collection process.

Limitations and the quality of the data collection

Ethics are a crucial component in research (Saunders, Lewis, & Thornhill, 2016, p. 201). Researchers are obliged to conduct their research in an objective manner and in appropriate consideration of moral aspects. The impact and consequences of the research results need to be carefully considered and the voluntary nature of participation as well as the confidentiality and conditions agreed with the participants must be respected. The authors are aware of the ethical aspects and initiated steps to meet these throughout their research.

Fulfilling quality criteria are essential in business research to guarantee reliability, validity and transferability (Saunders et al., 2009, p. 194). The selected qualitative research design and the sample selection could cause limitations of the following parts. The selected interview participants could be biased due to their position within the company and their special focus on sustainability. The study does not provide a full picture as it does not consider other employees. The limited sample size - four interviewees in total - as well as the length of the interviews and questions asked during this time might influence the interpretation. Especially the different setting with one of the companies could lead to a limited comparability as the dynamics in the interviews could have caused rather complementary than autonomous statements. Due to the limited time and the bias of interviewees crucial parts might not be discussed. Also, the fact that the research is only based on interviews with representatives of the two companies need to be considered to critically assessing the objectiveness of their statements. The authors are aware of the limitations and aim to tackle them in the following analysis and discussion.
4. Company overview

By introducing the companies with a short background of their field of business, relevant information and their strategies, the reader gets a better understanding of the companies themselves and is able set the findings from following chapter into the relevant context.

BMW Group

The Bayerische Motoren Werke Aktiengesellschaft, known under its abbreviation BMW AG, is the parent company of the BMW Group. The BMW Group is a German manufacturer which main purpose is the production and sale of engines and engine-equipped vehicles, included with the related products and hereby focus exclusively on premium products. It is divided into the Automotive, Motorcycles and Financial Service segments where the first is core business unit. The company was founded in 1916 and has it headquarter in Munich, Germany. Nowadays incorporated Rolls-Royce Motor Cars Ltd. and MINI. The BMW Group has around 130,000 employees with production plants in fourteen countries. The company operates on a global scale and generated a revenue in 2018 of 9.8 billion Euro (BMW AG, 2018, p. 26). In the same year more than 140 000 electrified vehicles were sold (BMW AG, 2018, p. 30).

The following information are related to BMW’s sustainability efforts and retrieved from the 2018 non-financial report of BMW Group (BMW Group, 2018d). Supplementary information is gathered from the company’s webpage and other websites related to the topic of BMW and sustainability. The objective of this section is to support the interview guideline and give a contextual understanding of the companies’ business model and sustainability approach.

The automotive segment is the core element of the organization. It offers a wide range of models, either equipped with Otto engines, hybrid vehicles or electric engines (BMW i). The i models with its special focus on innovation and sustainability symbolizes BMWs vehicle of the future. The long-term orientation is embedded in the company’s philosophy and research & development is of key importance. The NUMBER ONE > NEXT Strategy hereby focuses on the topics of electric mobility, digitalisation and autonomous driving, also known as D+ACES (Design, Autonomous, Connected, Electrified, Services) (BMW AG, 2018, p. 28). The core element of the development is to create added value for customers.

As a globally active enterprise, the BMW Group is aware of its role in society and environment. In their financial report (2018, p. 30) BMW claims to be “a pioneer of sustainability not only within the automotive industry, but across other sectors.” Appointing a sustainability manager in the year 1973 the company took sustainability matters into consideration as one of the first automotive company. Nowadays they have a Sustainability Board which sets the strategy. To align its business to the environmental and social challenges BMW committed 2001 to the UN Global Compact and United Nations Environmental Programme and tries to follow and incorporate the principles provided through the platform. The companies non-financial report hereby addresses 10 out of the 17 Sustainability Goals (see Figure 4), which describes implemented steps as well as nonbinding forward looking statements on basis of BMWs current assumptions and forecasts.
The given mission is “to be the most successful and most sustainable premium provider of individual mobility” (BMW Group, 2018, p. 10). These strategic goals are within the 2020 agenda – defined 2012. The report continues to describe the role of sustainability within the organization. As an integrated component, sustainability is an inherent strategic objective of the management system and need to be considered at every decision. The implementation was initiated “top-down” and is since 2009 an essential element throughout the corporate levels, measured by specific targets and KPIs (BMW Group, 2018, p.18). The term Efficient Dynamics (BMW AG, 2018, pp. 29–30) is used to describe the improvement of energy management and aerodynamics at the BMW i series, which lead to reduced fuel consumption and vehicle emissions. Resource efficient material use and renewable energy in the production are in addition supportive for a reduced footprint in the entire product life cycle.

To reformulate the expiring strategy, BMW underwent last year a review of its sustainability initiatives and therefore was on an ongoing dialogue regarding sustainability matters with its stakeholders. Especially the regular dialogue with the capital market is an indispensable source and mutual coordination of interests. All the stakeholder dialogues supported the company to elaborate the relevant factors which need to be considered for the upcoming sustainability strategy. The new era of sustainability is already briefly outlined on the NUMBER ONE > NEXT Strategy. Here, BMW state to consistently integrate sustainability into their business model based on a customer-
oriented approach (BMW AG, 2018, p. 27). It committed to preserving resources and with its holistic approach it manages sustainability along the entire value chain (BMW AG, 2018, p. 30).

The merger of the mobility services of BMW Group and Daimler AG is a management decision to provide a dynamic growth by both bundling competences. Both companies realized that shaping the future of a highly competitive environment can only be managed through cooperation and standardization. Further partnerships in this context are signed or in negotiation (BMW AG, 2018, p. 30).

**Volvo Car Group**
The Volvo Car Group is a premium car manufacturer based in Sweden. The first car was produced in 1927. Volvo is nowadays owned by Zhejiang Geely Holding of China. In 2018 they had 43,000 employees and 642,000 sold cars. The firm structure is split into the “car subscription service Care by Volvo, mobility company M, electric performance arm Polestar as well as sizeable stakes in new Chinese car brand LYNK & CO and software company Zenuity” (Volvo Car Group, 2019a). Volvo Cars was separated to the Volvo Group in 1999 which is the mother firm producing trucks, buses, construction equipment (Volvo Group, 2019).

All following and written facts and figures are related to the company’s webpage and their Annual Report 2018 (Volvo Car Group, 2018). Related to the title of this academic thesis the focus is to give an overview about the non-financial, sustainable part of the report. Volvo is well known as a pioneer in the automotive industry with its innovative and sustainable concepts. To get a detailed understanding of Volvo’s vision, they published in 2018 their future ambitious they are aiming for 2025:

- 50% of all sales annually from fully electric cars,
- 1/3 of all cars to be autonomous driving cars,
- 50% of all cars to come from our subscription service

Volvo Cars’ approach is to be a premium car company for people who care about others and their environment. They want to re-think the way of doing business while going beyond the usual way and serve the society (webpage). Volvo Cars also committed to the UN SDG and implemented them into the different departments of the company throughout the program called “Omtanke” [see Figure 5] a Swedish word for “caring” and “considerations and “to think again”. “The SDGs act as our guide, with 13 out of the 17 directly addressed through our sustainability programme, Omtanke” (Volvo Car Group, 2018, p. 28). Volvo is also a member of the United Nations Global Compact's Action Platforms (Volvo Car Group, 2018, p. 76).

Volvo Cars is also mentioning that the growing awareness and importance in the world of a cleaner, safer, fairer and more prosperous planet is leading the way of sustainability. “Electrified, autonomous, connected and shared cars are impacting the transformation towards a service based business model” (Volvo Car Group, 2018, p. 14). In the near future, as Volvo is describing in their Annual Report (2018, pp. 14–33), the traditional behaviour of the customers will change and for this Volvo is adjusting their business model.
The new business model will have basically two pillars, the existing way of owning a car through buying it, the second pillar is split into two variations of a service-based way of mobility. The first part is a subscription service and there the customer will have the car always, the second part is a solution and service where the customer is only paying and using the service while it’s needed. Therefore, Volvo follows a two-step plan with four stages each. The first step is a transformation process and they assume that this needs a strengthened brand, a new vehicle range, a truly global presence and a standalone governance (Volvo Car Group, 2018, p. 23). The second step is a game changing business transformation towards more personal and direct relationships with consumers, more sustainable products and business, more safe mobility with leading AD technology and a more purpose driven organization (Volvo Car Group, 2018, p. 23).

![Figure 5: OMTANKE - Our Sustainability Programme (Volvo Car Group, 2018, p. 29)](image)

After the companies’ introduction, the thesis now presents the findings of the interviews and the secondary data (non-financial reports). The findings are divided into five categories, which conduce to analyse the respective companies and the automotive industry in general.
5. Empirical findings

This chapter presents the empirical findings drawn from the qualitative data collection. It outlines the findings from the semi-structured interviews as well as secondary data from the non-financial reports of BMW and Volvo. Furthermore, it provides the relevant empirical data for the analysis and discussion.

5.1. Contextual definition of sustainability

To get a better understanding what sustainability means to the companies, the interviewer asked how they would define sustainability within their business context. The answers help to link the theory with the practical approach and might reveal differences of the terminology.

BMW Group: Both representatives from BMW had a rather broad definition of sustainability. The initial academic understanding of sustainability is based on the Brundtland Commission (described in Chapter 2.1.1.). A basis for the operation is the triple-bottom-line approach (Interviewee 1, BMW). However, as strategic part of the company it is permanently re-defined by the changes of the environment. “We know for example many things outside the company are changing so it’s about further development of the business case. The business case was just selling cars but now we have to focus also on environmental questions and social aspects […] At the end of the day it’s a holistic approach over the whole value chain in order to have a value chain that fits or really addresses the challenges the company is facing.” (Interviewee 2, BMW).

Volvo Car Group: The Volvo Car Group is defining sustainability in the context of their business and a general approach of sustainability as their “[…] core competencies within the company it is a declared goal to sustainability. As a human centric car company, we are a brand for people who care about other people in the world in which we live” (Interviewee 1, Volvo). This is underlined with the commitment that Volvo goes beyond the daily business and is engaged in the society (Volvo Car Group, 2019a), they are not only selling cars.

5.2. Role of sustainability

By asking the interview respondents “which role does sustainability play within your business model?” the interviewer intent to identify the significance of sustainability as well as the business approach of the respective company to later compare it with the theoretical framework of sustainable business models.

BMW Group: To answer the question, what role does sustainability play within the business context, the interviewees of BMW highlighted the statements made on the company’s website and reports, that it is an integrated part of every decision and the relationship with its importance was updated various times within the last 10 years. This top-down integration has led that sustainability is an explicit component of the company’s management system (BMW Group, 2018d, p. 18). “The latest brief definition is that premium and sustainability belong together. So, there's no premium product without being sustainable. The current approach is that we strongly require a sustainability
leadership position from BMW Group [...].” (Interviewee 1, BMW). The BMW Group business is aligned with the responsible corporate governance and tailored to achieve a sustainable value creation within all areas of operation. A control and incentive system is implemented to supervise all divisions (BMW Group, 2018d, p. 17). Following the interviewees statement and the non-financial report (BMW Group, 2018d, p. 20) the company is currently on a new update cycle which is always based on a multi stakeholder dialogue. The feedback gained through the dialogues with relevant stakeholders is integrated in the deliberation of the new strategic orientation and is furthermore developed on updated material concerning sustainable issues. As an integrated part of every decision in the business case it is always evaluated and weighted against the factors on hand. In other words, “That doesn’t mean that always the most environmental fancy solution is taken. But it’s not that nothing happens without really focusing on those things.” (Interviewee 2, BMW).

Volvo Car Group: Which role does sustainability play within the business model for Volvo? The main part of an answer to that question is: “It’s a major part of what we do, and we try to get it in the entire supply chain. We try to include our social responsibility” (Interviewee 1, Volvo). By the approach of supporting and educating the society in the area, Volvo ways of operating is one way of showing the role of sustainability in the social aspect. One example is the fact, that the interviewee from Volvo named the cobalt mining in Congo and they prevent unacceptable working conditions. “We try to set up schools instead. So that the parents can live on that and the kids get an education in order to get out of that spiral to have an opportunity for a better job in the future, which also then protect the environment because they don’t need to do this labour work anymore” (Interviewee 1, Volvo). Sustainability also leads Volvo towards an ongoing process of looking for alternative materials and new solutions for the need batteries for electrical cars to reduce the environmental impact.

5.3. Sustainability contradicting business

What role does sustainability play in the respective business context and is there a contradiction in itself, to consider sustainability in the daily business? The aim hereby is to identify potential conflicts in the daily business operation, how these conflicts are proceeded, and which significance sustainability has at the decision-making.

BMW Group: The interviews with BMW revealed that contradictions and conflicts between sustainability and business happens on a daily basis. Conflicting situations occur “when sustainability requirements lead to rising costs, this is always a key-conflict potential and that has to be solved every day” (Interviewee 1, BMW) The company hereby conduct business case analysis and by doing so they evaluate the payoffs in time and decide on the individual case how to continue. A long-term orientation is mostly prioritized over short term profit. Both interviewees indicated that the real struggle is on decisions which cannot be monetarized. Here other factors have to be considered to capture the value or to mitigate the risks. On the one hand, a positive impact on reputation or on a greater public good can unleash a series of reactions leading either to more revenue or societal benefits which are transforming the company to new means. On the other hand, if a company does not scrutinize its impacts on sustainable matters big shitstorms could arise, which could lead to declines in sales and risk on the entire business (Interviewee 2, BMW). The decisions on these matters have to be carefully evaluated. the interviewee 2 exemplified on a plant how this case could look like. A conflict could be to implement
renewable energy in a plant in Munich as the costs of certain aspects could exceed the environmental benefits out of a business perspective. However, on the same case on a plant in China it would not cause a conflicting situation (Interviewee 2, BMW). Even then the challenges in some locations are higher, the vision of a carbon-free energy supply in all locations remains (BMW Group, 2018d, p. 62). It’s the responsibility “to look carefully at every single process and what you're able to do”. The interviewee continued that many studies has shown that “sustainability in the long run is more profitable” if you would not be sustainable. It means “it's just a matter of time” (Interviewee 2, BMW) and goes hand in hand with the previous statements made on the role of sustainability, where every case has to be evaluated individually.

**Volvo Car Group:** The empirical results of a possible contradiction between sustainability and doing business is, that Volvo is seeing a clear contradiction in it. “There is a contradiction in itself being in the automotive business” (Interviewee 1, Volvo). Basically, it is always in a way possible to improve existing products in environmental aspects even if the companies are already trying to be on the forefront. It is not only about the way a company is doing business to reach a certain level of sustainability, “[...] it depends on the technology available, it also depends on society and the customers” (Interviewee 1, Volvo). Volvos vantage point is also, that it needs more comprehensiveness for the society to make them change in their behaviour in the way of their everyday transportation, for instance car and ride sharing. Volvo is mentioning that upcoming challenges are to “find new business models and think about how to get our customers to share rides in order to minimize the impact on the environment” (Interviewee 1, Volvo). This is also clarified by Håkan Samuelsson, President and CEO of the Volvo Car Group in their Annual Report from 2018: “Mobility is undergoing a fundamental transformation and Volvo Cars is leading that change” (2018, p. 13). The company is developing and changing existing and new business models in order to fulfil and also lead the automotive industry in the future. “The transition from the traditional core business ‘Car-as-a- Product’, to the ‘Car-as-a-Service’ businesses, is driven by new mobility models, connected cars and digitalization” (Annual Report, 2018, p. 14). In these terms’ Volvo published three different ways of using a car in the future.

1. My car always – traditional business by Volvo Cars through B2C sales, ‘Volvo on call’ or ‘Care by Volvo’
2. My car sometimes – M-Volvo car mobility with its service and solution for shared mobility
3. My trip – individual transportation through e.g. taxi, car rental (Volvo Car Group, 2018, pp. 15–16).

All the mentioned aspects are strengthened by Interviewee 1 through the statement that “Volvo doesn't want you [the customer] to buy a car in the future” (Interviewee 1, Volvo). Volvos perspective on the contradiction of sustainability and business is also named by the changes in the way of doing their operative business. One way is that Volvo will be liable of the cars and be the owner instead of selling it to the customers, they see it as a challenge to by as profitable as before with this alternative business model. Another point of view is Volvos perspective on the upcoming challenges in terms of sustainability and the re-use of their product, this is once more underlined with the following statement: “We took systematically work on understanding the impact on sustainability, of the development, the production and the use of our products. And we try to understand how
to nudge the customer to a more sustainable use of our product or maybe even the sustainable choice of the right product from our side” (Interviewee 2, Volvo).

5.4. Key drivers for sustainability
To understand the sustainability efforts of the automotive industry it is imperative to identify the key drivers of the business undertaking. To achieve this the interviewer asked the company representatives following question: What is the key driver for sustainability within your company?

**BMW Group:** The key driver to consider sustainability as relevant aspect at BMW is first and foremost “the long-term responsibility for the company itself” (Interviewee 1, BMW). The interviewee 1 continued that “we believe that sustainability is a long-term requirement to ensure the long-term survival of a company”. Both interviewees mentioned that strong requirements are also set by the main owners and long-term investors. As a third influence both interviewees stated the public stakeholders. The public stakeholders are distinguished by society represented mainly by governmental/non-governmental institutions and customers. Even though the latter is part of the prior, the differentiation is necessary as they do not always have the same immanent interest as they speak once for their collective being and individual being. The society has the best interest for the well-being of the community and environment and serves as strong partner to discuss the corporate responsibility (Interviewee 1, BMW). Interviewee 1 quote that “quite sad, but the weakest, partner in sustainability requirements are customers”, while the interviewee 2 has formulated it in a more optimistic way, “that customers today are different then customers years ago”. BMW observe a growing environmental awareness (BMW Group, 2018d, p. 34) among customers who value “luxury elements but also […] less emissions” (Interviewee 2, BMW). People, especially observed in Munich, are parking their premium cars in front of organic supermarkets. “That people which are interested in organic food or sustainable things are also driving these vehicles” (Interviewee 2, BMW). Also, the growing sales number of electric and electrified vehicles (BMW Group, 2018d, p. 32) indicate the increasing interest in more environmental friendly option by customer.

**Volvo Car Group:** Sustainability “[…] it's in our DNA” (Interviewee 1, Volvo). “Volvo cars in Sweden have a long heritage of caring about the environment and being aware of its social responsibility” (Interviewee 1, Volvo). There are various examples were Volvo invented safety equipment for their vehicles (e.g. the three-point safety belt) (Volvo Car Group, 2018, p. 164) and opened it up for the whole industry without getting royalties. Volvo describes themselves that they are on the forefront and already ahead of the regulations and legislations. Another argument to support the status of the leading position is the fact, that Volvo already got the emergency-break in every car, however this only becomes EU legislation in 2022. The industry is forced to catch up to Volvo because the regulations push them to. There is not really a lot which is new to the company in terms of regulations because they already have those technologies implemented. “There is a growing global awareness of the importance of making our planet cleaner, safer, fairer and more prosperous. Consumers are increasingly attracted by companies that put sustainability high on their agendas” (Volvo Car Group, 2018, p. 11). The environmental drivers from the industry also lead Volvo to continuously improve and develop the production and usage of cars (Volvo Car Group, 2018, p. 11). Regulations on CO2 and NOx emissions supported the industry as well as Volvo to a more electric car
manufacturer (Volvo Car Group, 2018, p. 11). Basically, all areas of the company, manufacturing, logistics, suppliers and material selection, are changing towards more sustainability. Volvo is once again also inventing an alternative strategy of a second life for their product (Volvo Car Group, 2018, p. 11).

5.5. Requirements along the supply chain

Automotive companies are working with many resources and products from different suppliers. To have the sustainability performance of car manufacturer it is inevitable to analyse the entire production process with its suppliers. An essential part is what standards the companies have set for subcontractor and how strict they are implemented and controlled.

**BMW Group:** The requirements along the supply chain are described as very complex but also crucial structure because of “**its huge variety of different supplier behaviour or supplier development**” (Interviewee 1, BMW). BMWs network consist of approx. 12000 suppliers which are responsible for 80 % of the value creation (BMW Group, 2018d, p. 80). It ranges from small suppliers to big global players which can be both either extremely innovative, “**developed, entirely aware, elaborated, sophisticated of sustainability targets, structures, procedures**” or completely reluctant, refusing “**any activity which is not backed by a legislation**” (Interviewee 1, BMW). The increasing complexity of the supply chain present great environmental challenges. And the role of suppliers is also given by the fact that more than a fifth of the total emissions is generated at the suppliers (BMW Group, 2018d, p. 76). BMW established a wide range of mechanisms and procedures to meet the different necessities of each supplier to establish the set requirements. “**This ranges from real supplier development, information, training and motivation on the one hand, and on the other hand, to discussions on the eye to eye level, how to further develop sustainability requirements in the automotive industry**” (Interviewee 1, BMW).

BMW has a “**quite elaborated detailed set of requirements for our suppliers and we spend a lot of capacity to communicate these requirements, to check the fulfilment of the requirements and to develop procedures to make sure that they are met**” (Interviewee 1, BMW). The requirements are based on the principles of the UN Global Combat (BMW Group, 2018d, p. 81). A sustainability evaluation of more than 4000 nominated and potential suppliers location revealed this sustainability deficits at more than half of them ((BMW Group, 2018b, p. 83). The results show the huge discrepancy among the suppliers’ sustainability efforts and great challenge to establish an ambitious sustainable framework. A reference point hereby is the BMW Group supplier sustainability policy (BMW Group, 2018b) and purchasing conditions (BMW Group, 2018a), which incorporated UN Global Compact and outlines the company’s principles. Further BMW establishes due diligence processes in their supply chain to increase transparency, enhance resource efficiency and minimize risks (BMW Group, 2018b, p. 81).

Close cooperation with the supplier network has a high priority and the communication take place at several levels. Besides direct talks and negotiations with suppliers BMW participates in initiatives and associations, for example Responsible Business Alliance, where they communicate and encourage industry partners to set stricter standardized regulations (Interviewee 1, BMW Group; BMW Group, 2018a, p. 81). “**The suppliers are part of the whole system […] and in future we need to look more on lifecycle aspects**”
(Interviewee 2, BMW) to consider the emissions in the entire production phase, not only the emissions produced by car. With the BMWi project the company is setting a new internal standard of environmental and resource-efficient production. Its focus is on using mainly renewable energy, reduce resource and water consumption and recycle the materials used (BMW Group, 2018d, p. 41). The CDP Supply Chain Programme (BMW Group, 2018b, p. 83) supports BMW’s strategy to “spend a lot of capacity to communicate these requirements” (Interviewee 1, BMW) and overall growing awareness of a sustainable production.

**Volvo Car Group:** The supply chain is a big part of the daily business of Volvo and to secure the consistently level of requirements of sustainability the agreed to the self-assessment questionnaires regarding sustainability (CSR Europe, 2018). It is a standard in the automotive industry and an easy way for the company as well as the supplier to ensure the traceability within the supply chain. Additionally, Volvo also got *internal requirements*, for instance legal compliance, human rights, working conditions, caring for the environment and business integrity (Volvo Car Group, 2018, p. 49), added to the legislations to guarantee a consistent standard within their supply chain base. “Since 2012, Volvo Cars has used the Volvo Cars Quality Excellence process (VQE) to monitor suppliers’ performance in relation to our requirements and expectations, such as delivery performance and quality” (Volvo Car Group, 2018, p. 51). This is also underlined by Interviewee 1: “We would not pick a supplier, if they don’t adhere to our sustainability standard no matter how cheap they are because we all know at the end of the day it’s more expensive” (Volvo).

Volvo is aiming for a high level of sustainable requirements and beliefs in the suppliers with a similar approach. It is a challenge to get the right information from every supplier and it is also a challenge to ask the right questions to keep the standards as high as aimed. Volvo works with their supply chain to ensure that it:

- Drives resource efficiency including water, energy, waste and carbon emissions
- Cares for the health and safety of workforce, respect human rights and promote good working conditions
- Conducts business ethically and with integrity

(Volvo Car Group, 2018, p. 49)

The published Annual Report by Volvo Car Group (2018, p. 49) is also mentioning, the aim for a better world while cooperating with the suppliers to enhance the sustainability of their products and services makes them an automotive company with a responsible and transparent supply chain which is using the needed resources in an efficient way. Volvo is orientated on the movement towards a circular economy and is increasing the rate of more sustainable materials as well.

### 5.6. Requirements for transformation

To get an impression of the overall industry’s transformation processes the interview partners were asked to give a general assumption what must be done to develop the industry to an entirely sustainable business model industry.

**BMW Group:** Related to this question Interviewee 1 (BMW) stated: “The short answer is, we believe that this step forward can only be achieved via cooperation, automotive
industry standards and standardization”. An additional aspect was outlined by the Interviewee 2 (BMW), who believe this transformation can only be archived by working with more “renewable energy in production, but especially with vehicles with alternative drives trains.” Moreover, companies need to create a connected mobility solution which is interlinked with the public transport as a “backbone of every city.” Delivering these connected mobility solutions by providing additional “vehicles for mobility” (Interviewee 2, BMW) gives the chance to manage the complex challenges of urban mobility and enhance the living quality by no emissions, noise reduction, more space and better air quality. BMW is aware of the challenges cities are facing and want to “continually enhance our mobility services with innovative solutions for urban mobility” to “improve quality of life and also take advantage of market opportunities for sustainable premium products” (BMW Group, 2018d, p. 31).

Additionally, BMW has identified more key sustainability issues for themselves which need to be tackled to achieve a sustainable business (see Appendix 3 for detailed topics):

- Mobility solutions
- Decarbonization
- Circular economy
- Sustainable supply chain
- Employees and culture
- Responsibility and partnerships

(BMW Group, 2018d, p. 14)

BMW has set ambitious targets by participating on several discussions and working groups at different organizations. Platforms like CSR Europe, Carbon Disclosure Program and Clean Cargo Working Group have specific automotive working groups where BMW, as lead or found members, “tried to drive sustainability […] and tried to bring the movement further” by pushing “the initiatives to set more ambitious targets, targets at all” (Interviewee 1, BMW). Going hand in hand with the findings of the above-mentioned cooperation in the supply chain, two parties are identified. The innovative cooperative ones and the reluctant ones. Judging by the given statement: “there are always the same companies who rather tried to delay these activities or to reduce integration, reduce speed” (Interviewee 1, BMW); the process requires public pressure to achieve more sustainable targets. Three driving forces are identified. First the legislation. Second the public awareness. And third the consumers. They play an essential role in the transformation process. However, the interviewee 1 (BMW) mentioned “that the activities on all of these three parts, are still not strong enough to move the majority of the organizations in the industries”.

**Volvo Car Group:** The transformation process already started while considering refurbishing, recycling and second life, which leads the industry towards a change and to make “[...] the customer aware of the sustainability impact in all the different choice” (Interviewee 2, Volvo).

One big change is the trend about electrical cars and Volvo wants to develop the design and the material towards less non-recyclable and more sustainability. Therefore, the following statement underlines the transformation process in a wider sense. “When we started automotive, then we thought from cradle to grave […]. And today the thinking is cradle to cradle, which means we produce a car, then when it gets to the end of its physical life on the road, we will try everything we can to get the material back and also the effort and CO2 already put in the product to use that for the next product” (Interviewee 1, Volvo). The changing environment and the needed change of the
expectations and specific demands on the product on the customers side is mentioned by Interviewee 2 as: “You need to create an economic system which nudges the customer towards the most sustainable solution. You need to create the boundary condition that a sustainable product actually is attractive. Not only by its normal attributes, but also budget sustainability” (Volvo).

According to this statement the Annual Report (2018) draw the picture of sustainable value and growth along people and society (Figure 6). They base their values and growth creation on people, the core element of the company. Resources were used for the product creation, the manufacturing and logistics as well as the customer experience. All this has an impact on the society and Volvo wants to “contribute to a better society and protect people and the environment by creating partnerships for sustainable development and promoting traffic safety together with local and international organisations” (Volvo Car Group, 2018, p. 37).

Figure 6: Creating sustainable value and growth (Volvo Car Group, 2018, p. 36)

Furthermore, Volvo also believes that it is needed to “discuss together with the authorities and governments” (Interviewee 2, Volvo) about ways for more sustainable solutions, which already is a part of the Paris-Agreement. Aside from this, right business and tax mechanisms would create boundary conditions that would ensure a successful sustainable product, “[...] it all depends on the money you have, you can spend on a vehicle, any help by the tax system will also support your technology” (Interviewee 1, Volvo).

5.7. Chance or burden

By asking the question: “Do you see regulations and stricter legislation aiming for a more sustainable business approach as burden or does they encourage you to make even further developments to overachieve the criteria?” the authors intention is to identify how the car manufacturer cope with the obliged regulations given by institutions.
BMW Group: BMW has a double-barrelled answer to that question. On the one hand, there are rather weak climate change regulations in production and supply chain. On the other hand, very strong regulations of car usage and emissions. Both can be a chance or a burden. “Regulations and legislation define the minimum requirements, this has to be done anyway” (Interviewee 1, BMW). If the regulations are strong, as it is in the case of car emissions, it is a strong burden for BMW to achieve them. Often it is not only one requirement, there are many different aspects and regulations which need to be considered.

And rather weak or non-existent regulations are undesirable and embraced at the same time. “The diversity and lack of harmonisation of different regulations at the national and supranational level present us with huge challenges and have a significant impact on customer demand” (BMW Group, 2018d, p. 35). They are also chance and encourage BMW to develop their own standards (Interviewee 1, BMW). But these own set standards and developments of the past are also considered to be burdensome as society measures the company on continuing the ambiguous goals and requires the same steps in the future. “Reproduce the same thing in the future” (Interviewee 2, BMW) however requires the company to go into a completely other direction, as they did with the electric mobility. BMW was on the forefront of the OEMs by stepping into the electric vehicle market with the first i3 in 2013 (BMW Group, 2018d, p. 34). “The own set requirements and targets go significantly beyond existing regulations” (Interviewee 1, BMW). For example, the BMW sustainability goal is to “reduce its resources consumption (energy, water, waste, solvents) per vehicle produced by 45% by 2020 (base year 2006)” (BMW Group, 2018d, p. 58) or the objective for exclusively usage of renewable energy in the production plans by 2020 (BMW Group, 2018d, p. 76). In 2018, BMW covered 79% of the electricity supply with renewables (2017: 81% (BMW Group, 2018d, p. 38)). The overall objective of BMW is to be an innovative leader and overachieve the minimum legislative requirements.

Volvo Car Group: “We have had a competitive advantage in the past. Now when it becomes the legislation, then the others will close the gap, which means to us we have to look for, to overachieve, to see how much more you can do it. You are never been done” (Interviewee 1, Volvo). “It's about continuous improvement” (Interviewee 1, Volvo).

Volvo is also pairing up with universities and include their supply base to improve on several levels with a focus on sustainability. The status of experts in their field is helping Volvo to achieve a more sustainable pathway, they consider the different perspectives and opinions of different stakeholders as inspiring sources. “We want to be ahead of the curve once to be better than everybody else. [...] If you are too far ahead of the curve, then you can't get paid for doing it. [...] So basically, the legislation many times is the big equalizer, which forces the slow guys to keep up to the heart, which makes it easier for us to invest and even add a sustainability content to our cars because we’re generally not limited by ideas. We are limited by cost” (Interviewee 2, Volvo).

Additionally, Volvo already developed the first electric vehicle in 2011 but the market and the customers were not ready. “Nobody wanted to buy it” (Interviewee 1, Volvo). The different challenges are diverse and “[...] it’s always the balance between legislation and the market and the acceptance of the market” (Interviewee 1, Volvo). Volvo creates sustainable value and growth in multiple ways, they invest and utilize their resources in
a sustainable sense of their value chain and include people, society and the environment there are working in (Volvo Car Group, 2018, p. 37).
### 5.8. Matrix of essential findings

<table>
<thead>
<tr>
<th>Summary of the empirical findings</th>
<th>BMW Group</th>
<th>Volvo Car Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contextual definition of sustainability</strong></td>
<td>Sustainability at BMW is rather a broad strategy operational based on the triple bottom line but permanently re-defined due to environmental changes</td>
<td>Sustainability is a core competency and they are a human centric company where they have an impact on the society and environment</td>
</tr>
<tr>
<td><strong>Role of sustainability</strong></td>
<td>Fully integrated in the company's management system and integral part of every decision</td>
<td>Social and environmental responsibility, support and educate the society in the environment of Volvo, find new/more sustainable material, procedures to minimize the environmental impact</td>
</tr>
<tr>
<td><strong>Sustainability contradicting business</strong></td>
<td>Contraction depends on case; consideration challenges decision-making process and sometimes averse monetarized decision-making as other factors must be considered</td>
<td>“Contradiction in itself” find new business models to minimize the environmental impact, changing from selling cars to sell services related to mobility, find re-use models for cars</td>
</tr>
<tr>
<td><strong>Key drivers for sustainability</strong></td>
<td>“Long-term survival of the company” Internal: investors, long-term shareholders External: Public, policymaker/legislation, customer</td>
<td>Long heritage of social and environmental responsibility, making the planet cleaner, safer, fairer and more prosperous, second-life of the products and materials, improve manufacturing, logistics, suppliers and material selection</td>
</tr>
<tr>
<td><strong>Requirements along the supply chain</strong></td>
<td>Sustainability requirements are based on the UN Global Compact and part of every contract. Due diligence processes are implemented to control the supply chain meeting the criteria.</td>
<td>Self-assessment questionnaires, internal requirements: legal compliance and Code of Conduct following international conventions and guidelines (UN Global Compact, ILO, among others)</td>
</tr>
<tr>
<td><strong>Requirements for transformation</strong></td>
<td>“Transformation can only be achieved via cooperation and industry standards.” Connected mobility solutions must be developed; production on 100% renewable energy and resources; Ambitious targets and constructive work on several levels - BMW i &amp; Platforms -</td>
<td>Transformation process already started, refurbishing, recycling and second life, change with electrical cars, develop design, less non-recyclable parts, cooperation with authorities and governments, create suitable boundary conditions</td>
</tr>
<tr>
<td><strong>Chance or burden</strong></td>
<td>Lack of regulations allows to innovate (setting standards); Strong developments in the past burdensome (expected progress cannot be met); car emission regulations hard to reach; Slogan be innovative leader and overachieve legislative requirements</td>
<td>Continuous improvements, pairing up with universities and supply base to improve sustainability, be ahead of the legislations, keep the competitive advantage, not limited by ideas only limited by costs, balance between legislation and the market and the acceptance of the market</td>
</tr>
</tbody>
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6. Analysis and Discussion

In a transforming world, in which people around the world call attention to the changing climate every week, it is particularly important for the automotive industry to develop innovative, alternative and new technologies. The challenges for the companies, in this case, are the development of all different aspects of the business models in order to transform a significant factor of freedom in our society. Today, freedom in this context means to have the choice to select your individual way of transportation. The influence of each individual on the planet is no longer deniable. The overshoot day is approaching annually closer to the beginning of the year and there is still not enough done to counteract this trend. One of the probably most present and most prominent words in this context is ‘sustainability’. The different aspects of sustainability such as: social, environmental and economic, are levels on which the world economy must be realigned.

The authors do not explicitly mention the theoretical basis of CSR in the analysis because, as already explained in Chapter 2.1.5 (Dahlsrud, 2008; van Marrewijk, 2003), there is no clear definition and CSR is therefore not considered in the analysis. Furthermore, CSR in the broadest sense can also be seen as "greenwashing", which would only artificially distort the image of a company and this should be prevented.

The most widely used means of transport in individual transportation in Europe is the car (Eurostat, 2018). Therefore, it is the task of the established car manufacturers to encounter the upcoming challenges. As an example, the BMW Group and the Volvo Car Group have been consulted in this work. Both are highly ranked on international rankings (e.g. Corporate Knights) and claiming to be at the forefront in terms of sustainability. In order to ensure that the same understanding of the term 'sustainability in a business context' is given in the following, it makes sense to start with the two investigated company concepts. According to that, the first sub-research question is: What is their understanding of sustainability in their business context?

Understanding of sustainability within the business context

The overall conceptual definition of sustainability is the balance to meet the people’s needs while maintaining the nature (World Commission on Environment and Development, 1987, p. 16). This relatively broad definition enables to adjust and interpret it to the individual case. In doing so BMW defined its understanding of sustainability that it is a strategic process which needs to be constantly adapted. Related to the theory the understanding reflects a holistic approach where every stakeholder is advised and its limitation are given through the “present stage of technology, and social organization on environmental resources […] and by the ability of biosphere to absorb the effects” (World Commission on Environment and Development, 1987, p. 16). Volvo, on the other hand, sees sustainability as a core competency and part of their DNA by focusing on the impact on society and the environment. This perception is supported by the UN General Assembly who addresses it with economic development, social development and environmental protection (2010). Based on the given statements and overall appearance, both companies have a comprehensive understanding of sustainability and adapted it to their individual business in a practical but still well-defined form. Based on the company statements, sustainability is clearly based on the long-term perspective, whether as with BMW's persistence or, as with Volvo’s long heritage of safety-related, social and
environmental responsibility. Despite this articulated commitment to sustainability, questions about the thoroughness of these commitments remain. Especially premium car providers such as BMW and Volvo need to question themselves if it is the right way to produce big, powerful and heavy premium cars, such as the popular SUVs. The change towards a car fleet of smaller, more environmentally friendly cars is certainly more in line with the real implementation of a sustainable future of automotive transportation.

From an external perspective the automotive industry in general is in a fast-moving environment and there is a special focus on environmental protection through the public attention on various channels. The focus on social, economic and environmental sustainability is needed given the steady shortening of the overshoot period (see Figure 1, p. 2). Hence, it is positive to see that companies take responsibility, integrate it as core element in their strategy and furthermore innovate their business models regarding sustainability matters. This business approach is coherent with the statement of Schaltegger et al. (2016, p. 3) who suggest a modification and new business model towards a sustainable consideration within the companies to tackle the environmental challenges and to stay competitive. The trend can also be seen in the automotive industry in general. The total CO$_2$ emissions within the European Automobile Manufacturers Association decreased 23.7 % over the past ten years. The same decline is observed on energy consumption (-8%), water used (-24.5%) and waste (-5.7%)(European Automobile Manufacturers’ Association [ACEA], 2019). The overall decline could have different reasons which might lie in the increased sustainability measurements of companies, the cost saving or the external stricter regulations. Referred to the last, the initiated mandatory reporting due to the NFR has set a minimum standard. As the directive does not clearly define what to include in the reporting, companies are nowadays compared to their competitors. Therefore, this directive has indirectly initiated a competitive environment where more detailed reporting and stricter control mechanisms are implemented to prevent negative attention.

The scientific world is clear about the companies impact on the environment and its causes on climate change. Researchers have disclosed ways to use sustainability as a source of efficiency gain and profitability. A growing number of articles support this idea, of integrating sustainability as main pillar of the company’s business model. The business model innovation is basically the illustrated way of implementing changes of the operational business, either modifying existing or complementing new parts of the business model (Geissdoerfer et al., 2018, pp. 405–406). BMW and Volvo were hereby among the first in the automotive industry which took sustainability as a basis of decision-making and developed it from that moment on further. BMW is relying on the above described triple bottom line approach, to evaluate their options on the impacts of people, planet and profits. The findings of Volvo let assume that in this context they have set even more rigid criteria for themselves.

Sustainability is an integral part of both companies and goes beyond the pure social responsibility. The awareness and relevance of the topic clearly state that BMW and Volvo have implemented relevant components plus measurements and are now going through the innovation process to a fully evolved sustainable business model.

Key drivers for transformation process

The innovation process both companies undergo is a transformation from a business model, which is based on a costly production of environmentally harmful vehicles with combustion engines, to a sustainable business model, providing environmental-friendly
vehicles and e-mobility solutions. Many aspects play a role in this transformation. Now with the understanding and relevance of sustainability in mind, the next step is to identify the key drivers. In this context it is also relevant to examine their respective role. The interviewees identified overall the same key drivers, which are distinguished in internal and external drivers. The internal drivers are as described the companies own ambitions to use sustainability as source for innovation and streamline the internal processes to satisfy their employees, shareholders and investors. External drivers are the public stakeholders who were distinguished by society, governmental/non-governmental institutions and customers.

First the society, who has a general interest of well-being and therefore demands a responsible behaviour with respect to the environment and humanity. The impact of the resource exploitation and the high pollution while production and usage of cars causes ecological calamities and climate change which then influence the living of individuals. The call for action which was described at the beginning is increasing triggered by the rising ecological effects they are causing. The car manufacturers here observe the development and are in permanent dialogue with the public.

This attention is also captured by the second stakeholder, the governmental/non-governmental institutions who serve common goods and set the standard rules. National and international legislation enforces the economy and, in this case, the automotive industry in specific to maintain specific requirements. The UN SDGs are seen here as the external conditions of the entire framework. However, the EU has also issued some ground-breaking regulations for instance the more rigid emission regulations (Commission Regulation (EU) 2018/1832) and the NFR Directive (detailed explanations see p. 13-14). The two companies are torn when it comes to the legislative role. On one hand, they encourage certain standards and even work cooperatively towards more rigid regulations on governmental as well as non-governmental level. BMW is associated with several institutions and participate on working groups to agree on unitary industry standards. On the other hand, the overall interpretation and a finding at BMW in specific shows that strict legislation is not always welcomed. Particularly the mentioned EU emission criteria for cars cause difficulties. BMW was also involved in the Dieselgate and sentenced with a fine due to its emissions manipulation (Handelsblatt, 2019). The motivation, of course, is not only because of community nature. With a standardized supply chain, the companies can save money and achieve its ambiguous goals. However, the reluctance of some players, as for example on the working group of CSR Europe, prevent these goals.

The third stakeholder is the customer, who has an enormous influence by his demand. Even if the company’s development is prepared, customers decide what product finds a market. Volvo experienced this in 2011, where they launched their first electric car but did not find a proper sales market. The public debate and the imperative growing awareness of sustainability within the society lead to a changing customer behaviour and an increased demand of more sustainable vehicles. All interviewees agreed on that the customers demand, and public infrastructure is still not strong enough for switching the business entirely to the more sustainable hybrid and electric car solution. That is among the other mentioned reasons why the transformation of the car manufacturers is in a sluggish pace. But the set goals and scenario analysis allow the assumption of a sizeable market in a foreseeable future and nonetheless give car manufacturers the opportunity to
improve their strategies by testing different business approaches, while obtaining revenues from the current business.

**Business approach on the contradiction of sustainability and business**

In general, the contradiction of sustainability and business can be described as the change of further development of business models. There is a need for alternatives to the traditional car sales business model. Both companies are trying hard to follow different paths, from the car buying model to alternative revenue models. Volvo in addition works on designs and materials specifics while BMW has set its focus on including renewable energies. The goal is to ensure long-term profitability. Obviously, regulations and legislations also play a decisive role here, because institutions and governments issue clear guidelines, for example through tax incentives or stricter limitations, which everyone must adhere to. A product such as a car requires finite resources among other things steel and plastic for its manufacturing. Additionally, fuel is also required for its further use. These fossil resources have a price that the producing company has to pay and consequently passes on to the end consumer. In addition, the emissions arise during the use and production processes as well as in the entire supply chain, also need to be considered. The perception of both car companies differs from one to another. While the interview partners from BMW see it more as challenge and contradictions depend from case to case, the interview partner from Volvo clearly stated that it is “a contradiction in itself […]” (Interviewee 1, Volvo).

Nevertheless, society accepts this contradiction for the opportunity of mobility. However, it is the company’s responsibility to employ the most sustainable solution possible to provide vehicles for individual transportation. Combined with the sustainability understanding BMW and Volvo improved their business operation and currently attempt to implement this streamlined renewable energy use, resource-efficiency and sustainable business approach in their entire supply chain. The business model innovation gives them further chances to develop new revenue streams. Here, some new concepts modify the value of manufactured cars, e.g. from a sales business to a service provider while car sharing or leasing models or even as a full mobility provider. The element of sustainability within the sustainable business model does not solely mean that it is entirely focused on process and resource optimization, it is to a greater degree the opportunity for companies to create new means and re-define the value of the providing products. Detaching the current product and business model allows managers to think outside the box, finding completely new business opportunities or modify the current business approach. In this context, confronting the interviewees of Volvo that an increased car sharing could cause a decrease of sales was negated as the cars on the street are by number lower, but the lifespan of the cars decreases and lead to an increased turnover.

New and more sustainable friendly solutions however must be challenged continuously to reveal inefficiencies and shortcomings. Electric mobility is credited to be the future of transportation. Its carbon footprint is way ahead of the traditional combustion engine, emits, if obtained solely from renewable energy, zero exhaust emission in use and require less material and fossil fuels. But despite the indisputable facts, the data of electric cars is less promising in consideration of the extraction and processing of toxics as well as critical raw materials. Especially the batteries are hence critically analysed. The extraction of lithium, copper and nickel is not only just responsible for environmental damages it in addition has a social relevance. The mining happens largely in countries which are infamous for their violation of human rights combined with child labour and
no job safety. The research findings support this criticism and provide evidence that both companies have struggle to agree with their conscience. Increased CSR efforts are initiated (e.g. Volvo set up schools in Congo) to compensate their wrongdoing. The two engineers from Volvo argued that it depends on the technology available what can be done. Besides the improvement of batteries, Volvo, in addition, pursue research on other vastly available and sustainable materials which can replace it. Both companies are also investigating possible solutions how to minimize the impact. A circular economy with reuse and recycling of the materials in cars, especially the batteries, are hereby mentioned.

The contradiction that is emerging here is to adhere to the nature while using resources to meet the demand. The imbalance of a reckless economy with its environment lead to far reaching consequences for the environment and society. Even a reduction in the resource use and the emissions cannot represent a definitive alternative, because radical change is needed to tip trends like climate change, biodiversity and nitrogen overload. At this juncture, the business model innovation can help to find new sources of income, such as business within circular economies and resale of the cars themselves or components of it.

**Sustainable business model - Chance or burden**

Given the findings of the chosen examples, sustainability is perceived rather as chance than as burden. Both companies not merely see sustainability by their corporate social responsibility and as necessity to meet the imposed regulations of external drivers by doing business. They moreover see it as their chance for long-term survival. As sustainable leaders in the automotive industry BMW and Volvo are driven to innovate their business models towards profitability aligned with sustainability. The approach deduces from the conviction a long-term profitability and the firm’s survival, are coherent with maintaining the environment. This finding goes hand in hand with the statement of Carroll (2015, p. 95), who says that: “CSR has never been pure altruism, although some idealists would like it to be the driving motivation. In fact, businesses engage in CSR because they see in the framework the benefits for them as well as society.” It still requires further analysis and a more in-dept examination of the claimed statements given from corporations. Through the window-dressing and green washing in the past the beholder needs to confront it with a critical eye. The step to implement it in the business concept is however already a step in the right direction and is positively perceived.

To be prepared for this economic transformation and a step ahead of the tightened regulations, the two companies invest excessively in their R&D (BMW: 6.89 billion €/2018 to 5.16 billion €/2016 (BMW Group, 2018d, p. 6); Volvo: 12.10 billion SEK/2018 to 10.17 billion SEK/2016 (Volvo Car Group, 2019b)).

To be a step ahead allows a company to be prepared for more ethical set governmental standards and could even encourage governments to set new standards on a basis of their technology or materials used. This force competitors to invest tremendously to attain these new standards. Incurred costs on the R&D, which led into a contrary direction and weren’t as effective lead to high malinvestments. Depending on the strategy the use of the more sustainable implementations can be exploited as a competitive advantage or as regulatory measure for the market by lobbying governments to set the developed application as standard. This basic principle goes along with the statement of Bocken et al. (2014, p. 44): “Business model innovation for sustainability may not be viable on the start but may become in the future due to regulatory or other changes” and is in addition
supported by the mentioned rigid car emission directive of the EU which visualize the case. However, lobby work is generally under suspicion as tool to manipulate politician’s conscience for the company’s own interest. Therefore, it needs to be critically examined. The car lobby groups and individual companies represent one of the largest lobby groups on EU and on national level. The practise and influence have far reaching impact on legislation. Associations, such as the ACEA - European Automobile Manufacturers Association (BMW & Volvo member) or the German VDA - Verband der Automobilindustrie (BMW member), are renowned for their intensely lobby to secure lighter touched regulations (EUbusiness Ltd., 2019). A contradicting point of too powerful lobby work is the fact that less regulations do not incentivise to innovate. This can cause a loss of competitiveness on a global scale. Car manufacturers, especially but not only from Asia, are catching up. The superior technology and the well-established image to date is overtaken. This can lead to decline in sales and furthermore create a gateway for more innovative companies from outside the EU.

Still, the two car companies exemplify the sustainable business model approach as most advanced in the automotive industry. Even though they have difficulties to switch instantly to a fully implemented sustainable business model the growing R&D expenses and growing sales figures from their electric car fleet look promising. As one of the largest industry sectors and largest private investor in R&D within the EU (European Commission, 2019a) the automotive industry furthermore has a considerable responsibility for society as well as the capacity to realize the challenges our society is facing and therefore can be on the forefront of sustainable development within the entire industry. The two car manufacturers, as prime examples, should hereby in a leading role to kick-off the movement on a broader scale. This would be aligned with their companies’ vision and further profit their image as sustainable leader.

The transformation, however, remain a long process and corporates often struggle to switch to completely new concepts and business models as the uncertainty is inevitably accompanied with a certain risk. High initial costs let car manufacturers hesitate to switch the sound business to the alternative concepts. An incremental change, mentioned in the theory, could hereby be the appropriate approach to finance the cost intensive transformation process with profits from the current operations. BMW i model is a great case example, where they established a certain sustainability standard in their business model and invest the intensive cost of R&D along with its new infrastructure and technology by the current revenues from the other models.

The findings also support to switch to a sustainable business model as it saves companies a lot of money by its efficiency increase. Analysing the production and processes within the organization with a sustainable perspective uncovers waste of resources. Both NFR reports identified and declared war against the waste of resources in terms of water and electricity consumption, together with enhancing innovative business models focusing on recycle management and re-use of products, towards a circular economy. Another cost centre where the sustainable solution is superior is the renewable resources and renewable energy in specific. The oil price for example is extremely volatile and had a constant increase over the recent years. On the one hand depleting the fossil fuels and the continuous significant demand, the economic logic foresees that prices arise. On the other hand, the economic principles of economy, of scope and economy of scale describe cost reduction by expansion of renewable infrastructure and materials. The switching cost for a modern infrastructure and supply chain mostly pays out within years. Especially if the
entire automotive sector with all the suppliers agree on a standardized sustainable business principle the, costs divide and get increasingly small.

Suppliers play a crucial role to fully evolve a sustainable business model, as they are responsible for around 80% of value creation, in case of BMW, hence exploiting a lot of resources to provide the relevant components to assemble the vehicles. Car manufacturers can only guarantee such models by integrating and aligning the existing or by finding alternative suppliers who meet their criteria. The two car manufacturers hereby ask for more support on institutional level as some suppliers are reluctant to proceed the next step. By initiating the steps within an organization, the two companies want to function as role models demonstrating the industry partners the benefits of that model, give trainings and stay in a continuous dialogue to manifest and improve it. Nonetheless, the car manufacturers can only obtain the sufficient capacity and profitability with an entirely sustainable supply chain. Efficiency gains through an aligned logistic and production as well as the use of renewable materials and re-use of the material must be the pivotal components for this supply chain.

The manufacturing of electro vehicles thus constitutes a step in the right direction as it allows to establish a new supply chain and in general need less suppliers, meaning of less dependency, as demonstrated at BMW i series case. On top, entirely new business models, where companies transform from traditional carmakers to full-service providers, gives the opportunity for a more integrated sustainable business model. Volvo expands its business towards being a service provider with the Care by Volvo and M – Volvo Car Mobility concepts, while BMW has merged its mobility services, DriveNow among others, with the Daimler AG. This delivery of functionality, rather than ownership, allows to provide new values for customers along with new income streams. This business model innovation provides the possibility to capture new values and alternative sources of income. Figure 2 (Bocken et al., 2014, p. 48) in the theoretical chapter provides many other areas where sustainability can be improved and new means generated.

Lastly, the profitability of sustainable business models depends on customers. Their demand and expectations must be met. The interviews of all representatives clearly state that the market is not yet mature because the majority of customers are still not sensitised for and convinced enough of the sustainability topic. Explained at the beginning, the public awareness for a more sustainable living is on the rise and society is realizing that the economic transformation can merely be carried out if their customer behaviour changes. Even through the empirical results imply the lack of institutional self-assertion, the governments initiated some incentive systems, where people are nudged to more environmental-friendly cars. Tax incentives as well as the implementation of environmental zones or free parking in cities are examples of that. And the legislative foundation of this work outlines several other initiatives where car manufacturers plus the end customers are either incentivised choosing the more sustainable solution or punished by doing the opposite. The overall takeaway of the research is that chances outweigh the burden of sustainable business models in the long-run and guarantee longevity, profitability along with societal acceptance for companies.
7. Conclusion

The automotive industry is under public scrutiny. Unfair competition combined with the increased awareness of sustainability, are challenges car manufacturers nowadays face. Their critical role in society and the transportation sector in specific brings along a great responsibility. Providing environmental responsible mobility solutions for the society will be the key challenge for the automotive industry and therefore they must innovate their business model in terms of value and sustainability. The organizations must detach the current business case by selling cars to novel forms of revenue generation, e.g. to turn into a full-service provider. The findings of this research combined with the presented literature supports this allegation and reveals the practical application of two car manufacturers. The results draw a conclusion that sustainability within the BMW Group and the Volvo Car Group is perceived rather as a chance than a burden. The innovation of their business model regarding a sustainable consideration is a chance for them to manifest their longevity, withstand the competition by creating new means, streamline their operations and while doing so contribute to a more admirable quality of life and reduce exploitation of finite resources. A sustainable business model is understood as a chance for car manufacturers but faces certain limitations and several dependencies in practice.

The research has shown that BMW and Volvo are on a good way to transform their business model. The sustainability efforts of both companies are substantial and support the theory that sustainable business models have found their acceptance in business practice. The advanced stage of implementation in the organizational strategies and daily processes highlight that it is not merely pure altruism or corporate social responsibility what induce them. It is moreover a source of innovation and profitability. However, the figures and challenges along that transformation process also indicate that some of their high set goals within their sustainability strategy might not be accomplished in the appointed time. Missing the targets is primarily due to external factors. The lack of adequate infrastructure and legislation, the reluctance of suppliers and the customer demand are by this means the main confounding factors. Nevertheless, it does not stop them to continue their process. Their overall positive attitude towards the sustainable business model arises from challenges ahead and the believe in a more environmentally friendly mobility. The car manufacturers are driven by the increasing external forces and their own desire of a long-time survival.

In summary, sustainable business models within the automotive industry represent a lucrative approach to innovate the current business model, but the transformation is a long process where its full potential is only unfolded by cooperation, more acceptance among customers and a supportive environment created by institutions. Up to now when it comes to sustainability, car manufacturers are drivers and are being driven at the same time.

Theoretical contribution of this work is provided by enriched empirical evidence given through the findings of the two car manufacturers. The comparison of the theoretical conceptions and definitions with the actual business practice in the automotive industry provides new insights for modification on both sides. The research points out the innovation from business models towards sustainable business models and clarifies differences between the conceptions. Furthermore, it defines and distinguishes the ambiguous use of the two terms, sustainable business model and CSR, in addition to the coherence of academic work and legislation. This is illustrated with the given cases in
order to give an assessment of whether there is a recognisable tendency to simply comply with regulations and laws, or whether the automotive industry perceives it as an opportunity to introduce far-reaching change and pursue it with conviction.

**Practical contributions** can also be assigned to this work by identifying potential fields of development that have not yet been fully used and developed in the automotive industry. The analysis of the two companies also allows to draw conclusions if the sustainable business model can be applied to the entire industry or even to other industries. The already successful fields of adaption of the two companies can be combined to create a new, more advanced solution. From this, future decisions in the business world can already be enriched with the results of this work.

**Limitations and future research** are given through the facts that it exclusively provides evidence of two automotive companies and therefore might not represent the entire automotive industry. The empirical findings are limited by the fact of the interviewee’s affiliation to the firms. Independent experts have not been consulted. Another limitation of this research could be that it only represents a snapshot of the actual situation. Since this industry is developing rapidly, it is difficult to guarantee long-term actuality. Here research could identify new evidence for research, especially if the legislation increases. The limited sample size and country dependency requires further research to investigate a company or country peculiarities. Furthermore, the opportunity for future researchers could be in the specific areas of regulations and how companies can be nudged towards an even more sustainable direction to reduce the environmental impact. Future research could also examine the relationship of sustainability within the business model and its return of investment in the automotive industry in a more general approach. Additionally, sustainability in the context of business models in other industries could be investigated. For this and other questions on sustainability, this thesis provides a starting point for future research.
8. References


9. Appendices

Appendix 1: CSR development

![CSR Development Diagram]

*Figure 7: 50-year trajectory of corporate social responsibility (CSR) - (Carroll, 2015, p. 91)*

Appendix 2: Interview guide

*Interview – Master Thesis on Sustainability in the Automotive Industry*

By Elias Strobel & Niklas Christiansen, Umeå University 2019

1. How would you define sustainability within your companies’ business context?
2. Which role does sustainability play within your business model?
   a) Did you experience any contradiction between sustainability and business?
   b) And if so, how did you tackle them?
3. What is the key driver for sustainability within your company?
4. Do you see regulations and stricter legislation aiming for a more sustainable business approach as burden or does they encourage you to make even further developments to overachieve the criteria?
5. How do you consider sub-contractor and supplier to meet the requirements in terms of sustainability you have set within your company?
6. What aspects would you consider to be needed to transform the automotive industry to a sustainable business industry?
7. How do you see your company’s sustainability efforts compared to your competitors?
Appendix 3: Interview schedule

<table>
<thead>
<tr>
<th>Interview</th>
<th>Company</th>
<th>Date</th>
<th>Time</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>Interview 1</td>
<td>BMW Group</td>
<td>02.05.2019</td>
<td>11:00 – 11:30</td>
<td>29:58 min.</td>
</tr>
<tr>
<td>Interview 2</td>
<td>Volvo Cars Group</td>
<td>06.05.2019</td>
<td>09:00 – 09:30</td>
<td>29:39 min.</td>
</tr>
<tr>
<td>Interview 3</td>
<td>BMW Group</td>
<td>09.05.2019</td>
<td>14:00 – 14:30</td>
<td>21:46 min.</td>
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</tbody>
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Appendix 4: BMW Group – sustainability issues

Key sustainability issues for the BMW Group

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Main topics</th>
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<tbody>
<tr>
<td>Mobility solutions</td>
<td>Vehicle pollutant emissions</td>
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<td></td>
<td>Alternative drivetrain technologies</td>
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<tr>
<td></td>
<td>Product safety</td>
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<td></td>
<td>Connected and autonomous driving</td>
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<tr>
<td></td>
<td>Mobility concepts and services</td>
</tr>
<tr>
<td>Decarbonisation</td>
<td>Fuel efficiency and vehicle CO₂ emissions</td>
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<td></td>
<td>Energy efficiency and CO₂ emissions in the value chain</td>
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<tr>
<td></td>
<td>Alternative drivetrain technologies</td>
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<td></td>
<td>Environmental and social standards in the supply chain</td>
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<tr>
<td></td>
<td>Mobility concepts and services</td>
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<td></td>
<td>Design for Recycling</td>
</tr>
<tr>
<td>Circular economy</td>
<td>Design for Recycling</td>
</tr>
<tr>
<td></td>
<td>Environmental and social standards in the supply chain</td>
</tr>
<tr>
<td>Sustainable supply chain</td>
<td>Human rights</td>
</tr>
<tr>
<td></td>
<td>Energy efficiency and CO₂ emissions in the value chain</td>
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<td></td>
<td>Occupational safety and health</td>
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<tr>
<td></td>
<td>Environmental and social standards in the supply chain</td>
</tr>
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<td></td>
<td>Combatting corruption and anti-competitive behaviour</td>
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<td>Employees and culture</td>
<td>Occupational safety and health</td>
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<td></td>
<td>Attractive workplace, talent identification and retention</td>
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<tr>
<td></td>
<td>Diversity and equal opportunity</td>
</tr>
<tr>
<td></td>
<td>Employee development, training and education</td>
</tr>
<tr>
<td>Responsibility and partnerships</td>
<td>General issues</td>
</tr>
</tbody>
</table>

Figure 8: BMW Group 2018 - Sustainability issues.jpg (BMW Group, 2018d)