

## Sharing is CARing

### A Multiple Case Study Into Resource Deployment Practices of Car Manufacturers in the Sharing Economy

#### *Abstract*

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The sharing economy is disrupting industries, with the automotive industry being one of the most affected ones. Car manufacturers are facing a future of declining car sales in which their traditional way of doing business is seemingly becoming less relevant. In an effort to adapt to this new market environment, these incumbents are increasingly starting to run their own shared mobility services which fundamentally differ from their traditional business of manufacturing and selling cars. Still, academia has recognized that firms can run their new business models by using resources from their traditional ones. However, actual practices especially in the context of the sharing economy have received little attention by researchers. The purpose of this study is therefore to investigate how car manufacturers use resources from their traditional business to run shared mobility services. For this, a multiple case study with five car manufacturers was conducted. We find that car manufacturers tap into the opportunities arising from running a portfolio of business models by deploying existing resources in their shared mobility services that go beyond a pure utilization of their own vehicles. The results of the study further indicate that it is mainly the strategic position car manufacturers take in the sharing economy that determines how resources are deployed in shared mobility businesses.

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**Keywords:** Sharing Economy, Business Model Portfolio, Resource Deployment, Strategic Positioning, Multiple Case Study

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# 1. Introduction

For decades, the business of car manufacturers has not been fundamentally challenged (Sachsenhofer, 2016). Either cost leadership or differentiation guaranteed the profitability of these companies (Tillemann, 2014; Bakker et al., 2011). Now, four technology-driven trends are arising, each having the potential to change the rules of the game in the automotive industry. Besides the electrification of the powertrain, autonomous driving and connectivity, the increasing market relevance of shared mobility services forces car manufacturers (OEMs) to challenge their traditional way of doing business (McKinsey & Company, 2016).

*“The automobile is now much more than a means of transportation from point A to point B. It is shaped by new forms of mobility. These are electric, connected, autonomous and shared. More seamless and intuitive, they are accompanied by the creation of new services.”* - Bolloré (2019), CEO Groupe Renault

Shared mobility services are argued to be a manifestation of the so-called sharing economy that represents an alternative mode of consumption in which the temporary access to goods and services strikes individual ownership (Owyang, 2013). This system of sharing is leveraged by tech-companies and startups such as Uber and Didi which challenge car ownership with their mobility on demand services and have achieved skyrocketing valuations within a few years (Cusumano, 2015; Chen, 2015). Experts argue that shared mobility services are *“here to stay”* (Owyang, 2015) and will further experience a strong growth in the next years (McKinsey & Company, 2016; Boston Consulting Group, 2016). Considered a substitute to private cars, services such as car sharing and ride-hailing directly affect the traditional business of OEMs and have become a controversially discussed topic in their board meetings.

Even though shared mobility services are already on the radar of most OEMs, their perceptions regarding the impact on the core business vary greatly. Owyang (2015) found that car manufacturers still need to *“understand how their market segments are changing”* to devise strategic responses on whether and how to participate in the sharing economy. An important consideration OEMs have to make thereby is how to create their market offering since shared mobility services follow a fundamentally different logic than the traditional business of manufacturing and selling cars. Mobility startups such as Uber and Didi are much more service- and software-driven and require a set of competences that are less relevant in OEMs' product-

and hardware-driven business (Acquier et al., 2019; McKinsey & Company, 2018; Mocker & Fonstad, 2017).

Goodwin (2015) states that sharing economy startups usually follow asset-light approaches as *“Uber, the world’s largest taxi company, owns no vehicles. [...] And Airbnb, the world’s largest accommodation provider, owns no real estate. Something interesting is happening”*. Even though technology startups such as Uber successfully run their mobility services without owning vehicles, there have been discussions about how incumbents can sustain competitive advantages by using assets, resources and competences from their traditional business and exploit synergies from running multiple business models at once (Casadesus-Masanell & Tarziján, 2012). Managing both their traditional business and a shared mobility business gives OEMs *“opportunities to tap into resources that are not available through other means”* (Aversa et al., 2017) and thereby has the potential to create advantages that other market players do not have. However, this discussion revolves mainly around the utilization of vehicles in shared mobility services that are owned by the OEM (Mocker & Fonstad, 2017). Current literature neglects the fact that OEMs have developed a rich resource base besides their vehicles in the past which can potentially be used in other business models such as their shared mobility services. Thus, the utilization of an OEM’s resources to create new shared mobility business models seems to be an interesting field for further study.

## **1.1 Research Purpose and Question**

With this thesis we aim at adding to the understanding of OEMs’ strategic responses in the sharing economy. In particular, our multiple case study of five car manufacturers is expected to reveal how they utilize existing resources of their traditional business to run new mobility services. With this effort, we hope to contribute to a more diverse business model view in the sharing space by elaborating on the ways in which established players can leverage their own strengths in the sharing economy. Our research efforts are guided by the question:

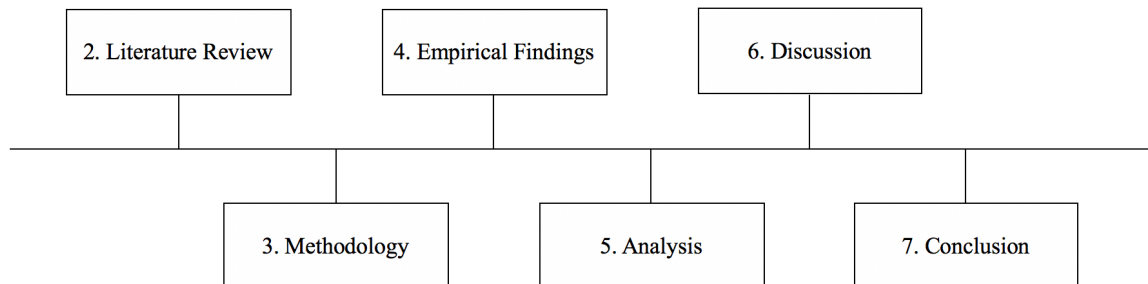
*“How do car manufacturers deploy their resource base to run their shared mobility business models?”*

## 1.2 Research Gaps

With our research question we address three research gaps. First, there is a lack of research regarding the development of new business models in changing environments that regards incumbents as the unit of analysis (Kim & Min, 2015). Second, the underlying mechanisms to run a new business model besides another one in a business model portfolio have not been researched thoroughly, especially in the context of the sharing economy (Guyader & Piscicelli, 2019). Third, previous sharing economy research has predominantly focused on macro- or micro levels whereas the meso-level remains relatively underexplored (Cheng, 2016).

## 1.3 Research Outline

This thesis is organized into six chapters. In chapter 2 we review existing literature on relevant theoretical standpoints. In chapter 3 we explicate and motivate the underlying methodology of our research. Following this, in chapters 4, 5 and 6 empirical results gathered from all cases are presented, analyzed and discussed. Chapter 7 summarizes the findings from this thesis and points out theoretical and managerial implications, limitations as well as future research suggestions.



*Figure 1: Research Outline*



## 2. Literature Review

This chapter reviews the current state of literature on relevant aspects of the resource-based view (2.1), business model research (2.2), dynamic capabilities (2.3) and business model portfolios (2.4). In section 2.5 theoretical standpoints from the literature review are synthesized into a theoretical framework which is further specified within the empirical context of car manufacturers in the sharing economy (2.6). In section 2.7 the research question of this study is derived and the specified theoretical framework is presented.

### 2.1 Resource-Based View

#### 2.1.1 Background

The resource-based view of the firm (RBV) is one of the most popular and influential theories in strategic management, offering a perspective on sources of a firm's competitive advantage (Gassmann et al., 2016; Barney, 1991). Penrose (1959) has been among the first to do groundwork for the RBV by defining firms as a “*bundle of resources*” that create outcomes such as products and services. Initially, Penrose's work has received relatively little attention but was picked up as a theoretical base by several authors who further developed the RBV argument (Barney, 1991; Rumelt, 1984), with Wernerfelt (1984) coining the term “*resource-based view*” in literature (Hooley et al., 2001).

In the RBV, internal resources controlled by a firm and its capabilities to use them effectively and efficiently are regarded as the main means of achieving sustained competitive advantage (Wall et al., 2010). In order for a firm to do so, Barney (1991) explains that controlled resources need to be valuable, rare, imperfectly imitable and non-substitutable, referred to as “*VRIN attributes*”. *Valuable* resources are those that enable a firm to implement strategies that improve its efficiency and effectiveness. *Rare* resources are those that are not simultaneously used by many other firms. Even if a firm has valuable and rare resources, they are required to be difficult to obtain or *imperfectly imitable* by other firms. Finally, a resource needs to be *non-substitutable* to maintain a sustained competitive advantage. If a resource could be substituted by another one in a firm's value-creating strategy, this would imply that competitors could potentially pursue the same strategy with a different mix of resources. The acquisition and development of resources fulfilling the VRIN criteria depend on the firm's prior paths and the concrete deployment in the firm-specific context, which explains cross-firm heterogeneity (Teece et al., 1997). Fundamental thoughts of the RBV are visualized in figure 2.

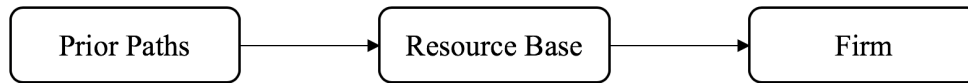


Figure 2: Key Elements of the Resource-Based View

### 2.1.2 Definition of Resources

Within the RBV literature there are various definitions for firm resources which differ from neoclassical perspectives of pure capital, labor and land input factors. Resources are generally described as *“tangible and intangible assets which are tied semi-permanently to the firm”* (Helfat & Peteraf, 2003; Wernerfelt, 1984). A more detailed definition that we adopt in this thesis is given by Barney (1991) stating that resources are *“all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable it to conceive of and implement strategies that improve its efficiency and effectiveness”*. Resources can be divided into the categories of financial, physical, human, technological, reputational and organizational ones (Grant, 1991) and provide the foundation for business models to run (Osterwalder & Pigneur, 2010).

## 2.2 Business Model Research

### 2.2.1 What is a Business Model

The concept of business models has started to gain momentum in academic research and managerial practice since the early 2000s (Gassmann et al., 2016; Chesbrough & Rosenbloom, 2002). In the subsequent years, scholars from various disciplines such as information management, strategy and organizational theory have recognized the relevance of the business model concept in their domains (Wirtz et al., 2016). The application in interdisciplinary fields has led to a lack of common understanding of the term *“business model”* and scholars are *“endlessly debating on what a business model actually is”* (Massa et al., 2017; Arend, 2013). Even though different definitions exist, business models are frequently used as descriptive tools in business contexts (Ritter & Schanz, 2019; Richardson, 2008). Many scholars therefore point out that the business model has a storytelling function by dividing the business into separate components which describe the logic of a business when put together (Osterwalder & Pigneur, 2010). Whereas there is no agreement on which concrete components a business model consists of, we define a business model as *“the articulation of how an organization converts resources [...] into economic value”* (Ritter & Schanz, 2019; Bocken et al., 2014; Teece, 2010) and regard resources as its foundation.

### 2.2.2 Strategic Choice School on Business Models

Gassmann et al. (2016) point out that the overall research on business models is clustered into seven schools of thought by dimensions such as their key ideas, theoretical perspectives and research foci. Based on this clustering, it is especially the strategic choice school that adds to the development of this thesis.

The key idea from the strategic choice school is that business models are results of firm-level strategic choices. Main authors of this research group include Casadesus-Masanell and Ricart (2010) who added to a distinction between strategy, business models and tactics through a two-stage competitive process framework. In the first stage, strategy is defined as the choice of the concrete business model that a firm will employ to compete in a specific market environment as depicted in figure 3. In the second stage, the chosen business model defines and limits a firm's range of tactical and competitive options. For example, a firm developing an online game might make the strategic choice of offering its game as a free version in which users can purchase premium features. Tactical choices could be about which features are offered in the free version and which ones have to be purchased. These tactical options are not available to a company that offers only one paid version without additional feature purchases. Being affiliated to game-theoretical standpoints, proponents of the strategic choice school argue that changing market environments require firms to reconsider their strategic choices and the respectively resulting business models (Gassmann et al., 2016).



*Figure 3: Strategic Choice School on Business Models*

## 2.3 Dynamic Capabilities

Developing strategic responses to changing market environments is a common challenge for firms. In this situation, the RBV is frequently criticized for not incorporating environmental dynamics in its argumentation but rather focusing merely on the exploitation of firm-specific resources in a static world (Ambrosini & Bowman, 2009; Priem & Butler, 2001; Teece et al., 1997). Building on the RBV's general logic of resource-based advantages, the dynamic capability (DC) framework has been developed to advance the understanding of how firms

manage to sustain resource-based advantages when *changing* environments challenge the dominant business model logic (Leih et al., 2015; Eisenhardt & Martin, 2000; Teece & Pisano, 1994). Also referred to as the “*Holy Grail of strategic management*” (Helfat & Peteraf, 2009), the DC framework has caught various scholars’ attention which led to a wide disparity in DC definitions. For the purpose of this thesis, we employ Teece et al.’s (1997) definition of DCs as a firm’s “*capacity to [...] achieve congruence with the changing business environment by adapting, integrating, and reconfiguring internal [...] organizational skills, resources, and functional competencies*”.

In the essence of the DC framework it is argued that a firm’s history, such as prior expertise and investments, determines the firm’s present resource base in a path-dependent manner (Teece et al., 1997). This resource base can be altered through a firm’s DCs, yielding an effect on competitiveness, new resource bases and alternative future paths for the firm – for instance by accessing new markets or by fundamentally changing operational systems – through which a firm may adapt to a new environment. In order to get a better understanding of DCs, a distinction between three main DC clusters is made, namely *sensing*, *seizing* and *transforming* (Teece, 2018).

*Sensing* comprises continuously analyzing the environment and customer needs to identify and assess opportunities or threats. Once promising opportunities are sensed, a firm is *seizing* opportunities by mobilizing resources to create a new customer solution and business model (Teece, 2007). In this thesis, we argue dynamic capabilities of seizing to comprise the four resource deployment processes of *reconfiguration*, *leveraging*, *integration* and *learning* (Bowman & Ambrosini, 2003). *Reconfiguration* encompasses the recombination of existing resources in new business models. *Leveraging* is the direct extension of a resource into a new domain of the firm. *Integration* is holistically managing and coordinating resources among business models and *learning* allows tasks to be performed more effectively and efficiently. Finally, a constant renewal or *transformation* of the seized opportunity is required to reach evolutionary fitness and to adapt to ongoing changes in the environment (Teece et al., 2016), for instance by adapting single components in a new business model.

For the purpose of this thesis, it is particularly relevant to highlight a firm’s seizing activities that lead to new business models in changing market environments through the four processes of resource deployment (fig. 4).

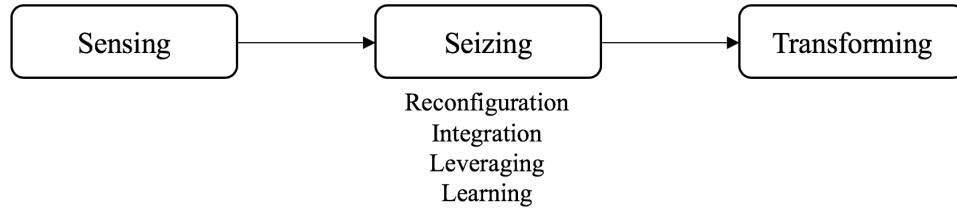


Figure 4: Dynamic Capabilities

## 2.4 Business Model Portfolios

Building on arguments of the dynamic capability perspective, a firm may deploy its resources to create a completely new business model. However, the already established business model might still be run which leads to a dual mode of business. The “*duality school*” captures this situation as a research focus with the key idea that a firm may employ two co-existing business models to exploit opportunities with the established business model and explore opportunities with the new one (Gassmann et al., 2016; Markides & Charitou, 2004).

Thoughts from the duality school have been further developed into a business model portfolio perspective in which several scholars recognize that an increasing number of firms is adopting two or more business models at once due to challenges such as industry disruptions and overall changes in the external environment (Aversa et al., 2017; Schwarz et al., 2017; Sabatier et al., 2010). For the purpose of this thesis, we follow Aversa & Haefliger (2016) in defining a business model portfolio as a firm’s engagement with at least two business models and business model diversification as the “*activity of establishing, managing, and eventually terminating business model portfolios*”. Research in this field is commonly taking a strategic perspective, investigating whether business models in a portfolio can share resources (Casadesus-Masanell & Tarziján, 2012). The concept of relatedness hereby captures the extent to which synergies exist between business models that add to resource efficiency (Sohl & Vroom, 2014; Bryce & Winter, 2009). Synergies are found to be especially relevant in capital-intensive and high-tech industries in which companies can realize economies of scope through “*redeploying valuable assets such as knowledge, technology, and prime resources*” between business models (Aversa & Haefliger, 2016).

Recommendations for firms that are about to diversify from one business model into a business model portfolio are therefore to identify opportunities in the environment which enable the firm to utilize resources in the new business model that are “*closely related to some employed by*

*the existing business model(s)*” (Aversa et al., 2017). Furthermore, the firm’s management needs to coordinate relationships between its business models properly in order to optimize synergies and minimize resource dilution (Schwarz et al., 2017). This coordination process requires management to understand how business models could and should share resources.

## 2.5 Theoretical Framework

In this section we synthesize theoretical standpoints from the preceding literature review on the RBV, dynamic capabilities and business models into a theoretical framework of resource deployment between business models in changing market environments.

For our framework, we follow Teece et al. (1997) and define a firm’s *prior paths* such as its unique history and investments to constitute the firm’s *resource base* which we categorize into financial, physical, human, technological, reputational and organizational resources (Grant, 1991). We model a firm at the edge of two market environments in which it deploys its resource base to implement and run one business model in each of them. First, we regard a firm’s *traditional market environment* in which it is running an *existing business model* that is defined by the firm’s *strategic positioning* in this market environment (Casadesus-Masanell & Ricart, 2010; Mintzberg, 1987). Second, we regard the firm at the edge of a *new market environment* in which the firm *senses* the environment for opportunities and *seizes* them by employing a *new business model* based on the firm’s strategic positioning in the new market environment. The new business model is thereby implemented and run by the resource deployment processes of *leveraging, reconfiguration, integration and learning* (Bowman & Ambrosini, 2003). Consequently, a business model portfolio, defined by Aversa and Haefliger (2016) as “*engaging with at least two business models*”, is established.

Finally, we propose that a firm can also develop new resources in its business models that will feed back into the firm’s overall resource base to be deployed in other firm domains, particularly from its new business model as “*subsidiaries can engage in reverse technology transfer to the parent that may well generate opportunities*” (Teece, 2014). The resulting framework, as shown in figure 5, largely revolves around Teece et al.’s (1997) thoughts on related diversification that builds on existing resources and is “*justifiable when firms’ traditional markets decline*”, being “*the only form of diversification that a resources and capabilities framework is likely to view as meritorious*”.

In section 2.7 the developed framework is further specified within the empirical context of car manufacturers deploying their resource base to run business models in the new market environment of the sharing economy.

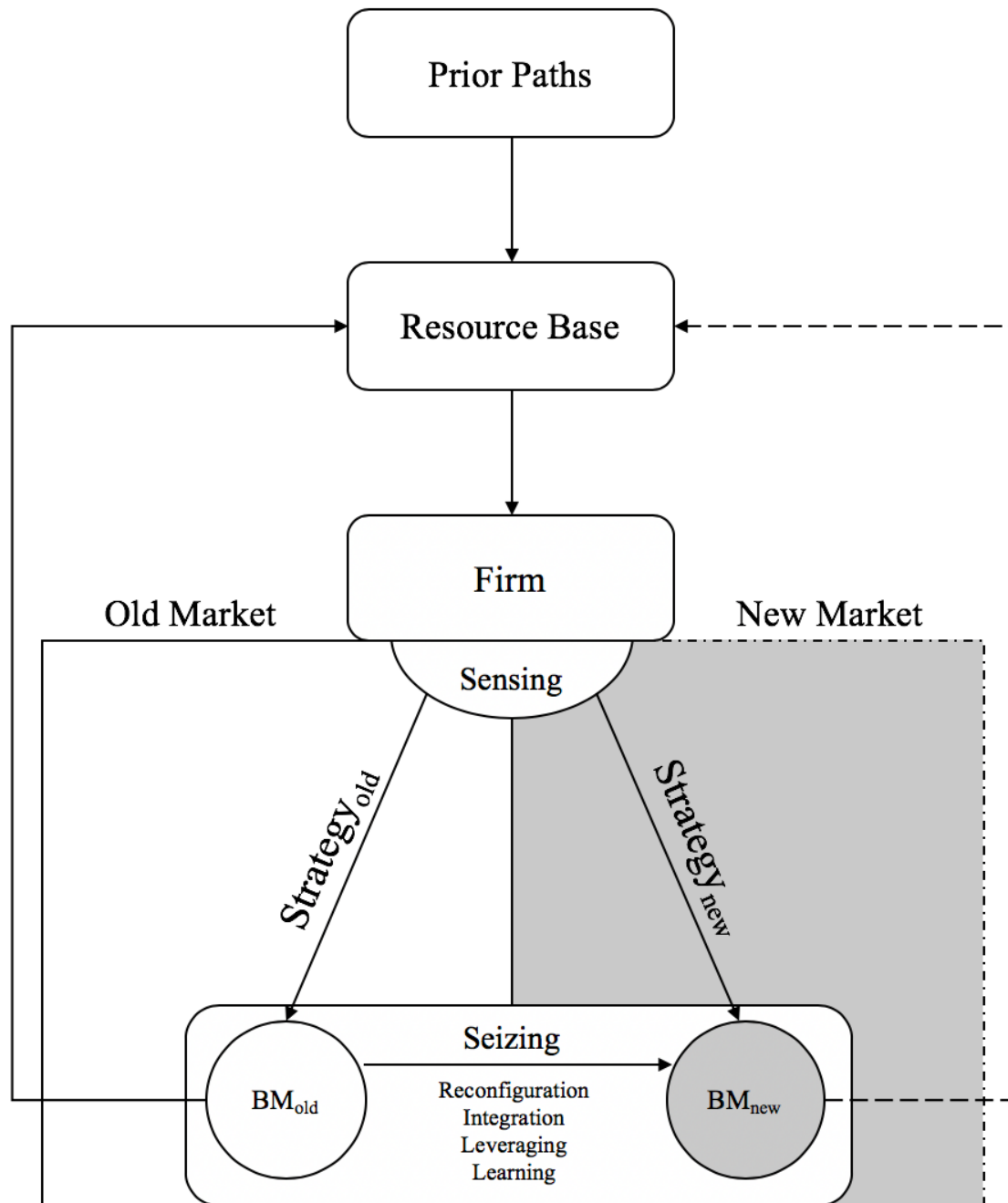


Figure 5: Theoretical Framework

## 2.6 Empirical Context

In this section the empirical context of car manufacturers in the sharing economy is developed. In section 2.7 this context will be integrated into the theoretical framework to serve as an analytical frame.

### 2.6.1 Sharing Economy

Driven by technological, economic and societal factors (Owyang, 2013) the sharing economy has grown enormously in the last years, with Uber and Airbnb being among the most famous companies operating in this new sphere. PwC (2015) estimates that in 2015 the global revenue in the travel, mobility, finance, staffing, music and video streaming sectors stemming from sharing amounted to \$15 billion with the potential to increase to \$335 billion by 2025. Due to its immense growth as well as its far-reaching impact on socio-economic systems the sharing economy has not only been discussed in media but also stirred attention of academia and practitioners (Benoit et al., 2017; Muñoz & Cohen, 2017; Cheng, 2016). In particular, executives of traditional businesses such as hotel chains and car manufacturers are alert to the potential impact the sharing economy might have on their business but struggle with sensing, assessing and responding to threats and opportunities stemming from this new market environment (Zhang et al., 2018).

#### 2.6.1.1 Definition

Scholars do not agree on one unified definition of the term “*sharing economy*” (Muñoz & Cohen, 2017; Barnes & Mattson, 2016; Martin, 2016). Dredge and Gyimóthy (2015) identified 17 terms that are closely related to “*sharing economy*” and frame it as a “*hybrid, digitally facilitated, alternative economic model embedded in (or rediscovering) deep-rooted cultural, moral and ecological rationales*”. Researchers and practitioners engage in ongoing debates on where and how to draw clear empirical and conceptual boundaries of the sharing economy and if, how it differs from collaborative consumption which is often used interchangeably (Chase, 2015; Owyang, 2013). Still, there seems to be a consensus around certain key elements that constitute the sharing economy. It can be characterized by the sharing of an owner’s under-utilized tangible or intangible assets (Muñoz & Cohen, 2017) enabling a non-owner to temporarily (Kumar et al., 2018) access them either in exchange for money or for free (Frenken & Schor, 2017; Eckhardt & Bardhi, 2016). Information and communication technologies are used to orchestrate and facilitate the sharing process (Botsman & Rogers, 2010). For the purpose of this thesis, we will exclusively use the term “*sharing economy*” (SE) and rely on the above-mentioned key elements of it.



### **2.6.1.2 Impact on Incumbent Firms' Businesses**

Research seems to agree that the SE as a new market environment could transform certain industries and impact traditional players' businesses (Martin, 2016). With his so-called "*Honeycomb Framework*" Owyang (2016) provides an overview of the different sectors that are affected by this new form of consumption. In his latest update of the framework, he includes sixteen different sectors reaching from transportation to beauty and wellness. Ismail et al. (2014) point out that especially firms in the retail, automotive, technology, hospitality, media, finance and travel sectors will be impacted by the SE. Incumbent firms now do not only have to compete with their traditional competitors, but also have to deal with new market players that arise from the SE (Cusumano, 2015). In some cases, these competitors are perceived as disruptors whose "*winner-take-all*" strategies aim at dominating global markets by making traditional players irrelevant (Muñoz & Cohen, 2017). A powerful weapon in these SE firms' aspiration to gain market share is the potential that lies in network effects and platform dynamics which enables them to grow exponentially (Cusumano, 2015). The accommodation industry represents a prominent example of how new market players such as Airbnb and CouchSurfing have changed the rules of the game (Acquier et al., 2017) as hotel revenues declined by up to 10% resulting from their market entry (Zervas et al., 2017).

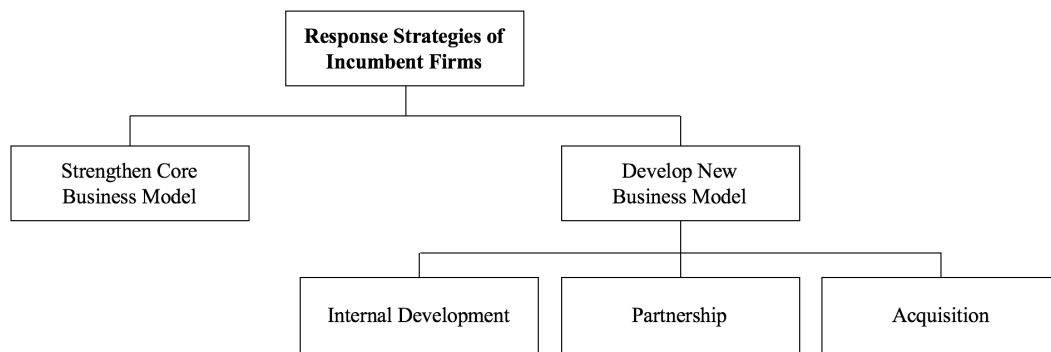
Nevertheless, the SE as a new market environment does not only pose a threat to the business of traditional companies but also offers opportunities to them (Matzler et al., 2015). To avoid losing market share to new competitors and in an ideal case to benefit from new opportunities arising from the SE, incumbents have to rethink their current business and develop response strategies (Zhang et al., 2018; Matzler et al., 2015).

### **2.6.1.3 Responses of Incumbent Firms**

To support traditional firms in assessing threats and opportunities stemming from the SE, researchers developed checklists, frameworks and guiding questions (Constantiou et al., 2017; Kathan et al., 2016; Botsman, 2014). Some researchers also attempted to identify and categorize strategies traditional firms can develop to respond to the SE.

On the one hand, traditional firms can respond to the SE by strengthening their core business. This can be done by either using already existing resources in a new way to better address customer needs and attract new customers (Zhang et al., 2018) or by focusing on superior aspects of their business that no SE competitor can offer such as standardized service in hotels (Cusumano, 2015).

On the other hand, traditional firms can compete in the SE by developing a new business model which can be done in three different ways. First, they can build up a new business model completely internally (Ciulli & Kolk, 2019). Second, they can engage in partnerships with companies from the same or from another industry to collaboratively develop a new business model (Ciulli & Kolk 2019; Zhang et al., 2018). Third, they can acquire another company that is running a SE business model (Ciulli & Kolk, 2019; Constantiou et al., 2017).



*Figure 6: Response Strategies of Incumbent Firms*

## 2.6.2 Car Manufacturers

Car manufacturers (OEMs) and their strategic responses to the sharing economy were chosen to be studied in this thesis for three reasons. First, there is a consensus among researchers and practitioners that the SE will affect the automotive industry, making it one of the most impacted industries (McKinsey & Company, 2017; Sachsenhofer, 2016; Ismail et al., 2014).

Second, the SE has captured the attention of many car manufacturers and led to different reactions to this new form of consumption (Constantiou et al., 2017; Deloitte, 2017a). OEMs are taking new paths in shaping the future of mobility as one of the most prominent examples shows – being competitors for many decades, BMW Group and Daimler AG recently launched a joint venture to build up a strong position in the shared mobility market (BMW Group & Daimler AG, 2019). Similarly, other car manufacturers have developed strategies to take an active role in the SE by offering shared mobility services such as ride-hailing or car sharing. Thus, the automotive industry offers a broad pool of different examples to study in this thesis.

Third, the traditional business of car manufacturers and the newly developed shared mobility services follow two fundamentally different business logics. Whereas the core business of

OEMs is product-focused and hardware- and resource-heavy, shared mobility businesses are very service-oriented and software-heavy (Acquier et al., 2019; McKinsey & Company, 2018; Mocker & Fonstad, 2017). However, from a business model portfolio perspective it is interesting to investigate in which ways synergies between the traditional business models and the new shared mobility business models of car manufacturers exist based on their resource-heavy and highly-technological business nature (Aversa & Haefliger, 2016).

## 2.7 Specified Theoretical Framework

Bringing together the empirical context of car manufacturers developing and running shared mobility business models (section 2.6) and the previously developed theoretical framework (section 2.5), this thesis aims at investigating the following research question:

*“How do car manufacturers deploy their resource base to run their shared mobility business models?”*

For this, we apply the specified framework depicted in figure 7 to analyze resource deployments between traditional and new business models of five different car manufacturers in the sharing economy. Thereby, we address the following three identified research gaps.

First, little research has been conducted on incumbent firms which develop new business models as a response to changing market environments (Kim & Min, 2015). We address this research gap by selecting incumbent car manufacturers which develop new shared mobility businesses to react to the sharing economy as unit of analysis. Second, business model diversification is still a relatively underexplored field (Aversa & Haefliger, 2016). In particular, it is apparent that researchers have not focused on the interrelation of business models and the underlying mechanisms to operate them within a business model portfolio. We address this gap by regarding car manufacturers' resource deployments between their traditional and new business models. Third, previous research within the context of the SE was predominantly built on macro- or micro-levels (Cheng, 2016), for instance by investigating environmental performance of sharing models or by analyzing shared services from a user perspective. Adopting a firm-level perspective, we address the lack of research on the SE on a meso-level.

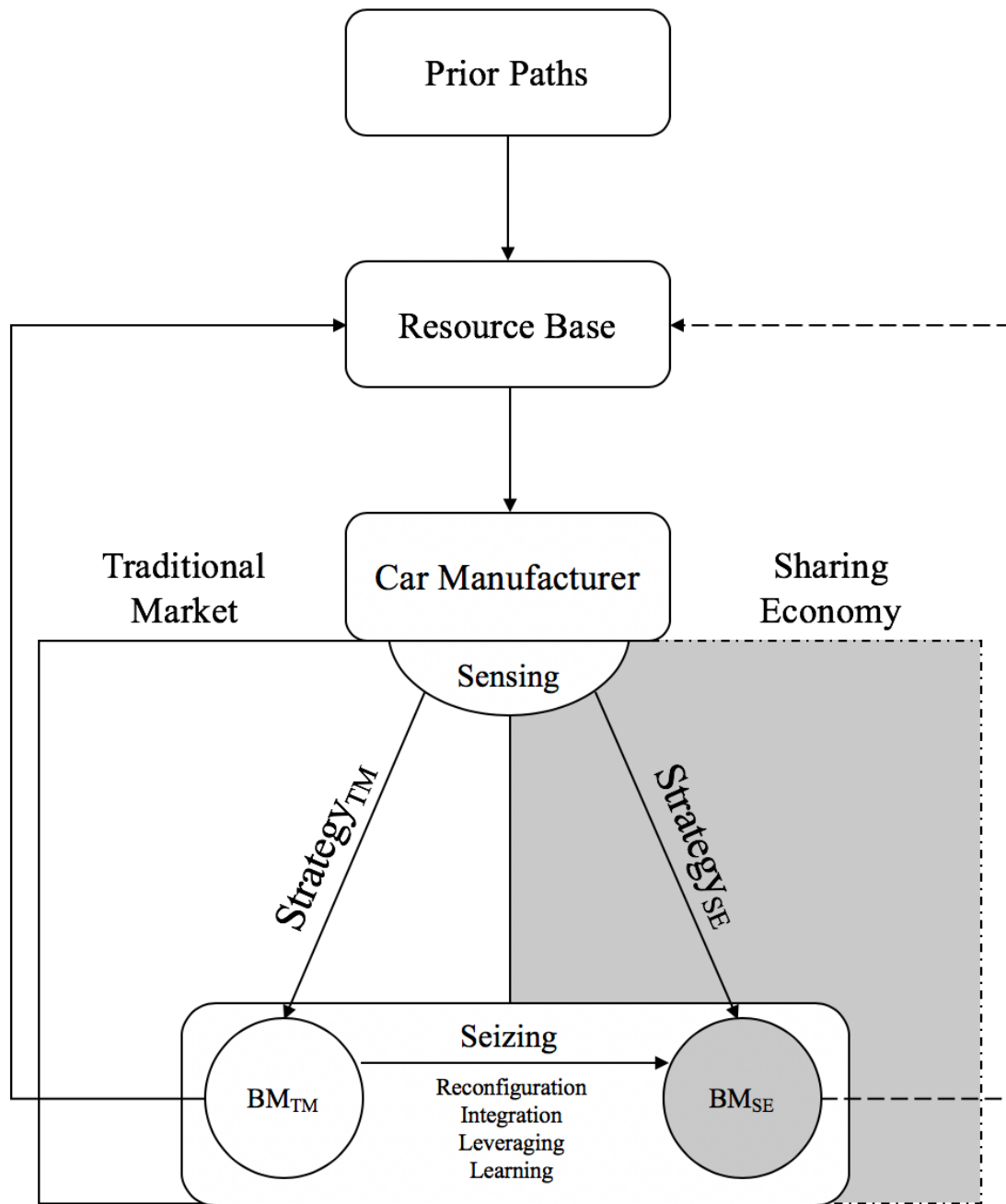


Figure 7: Specified Theoretical Framework

### 3. Methodology

This chapter outlines the research methodology of our study. After a description of the research design in section 3.1, data collection (3.2) and analysis (3.3) are presented. In section 3.4 we reflect on the quality of the study.

#### 3.1 Research Design

##### *Qualitative research strategy*

A qualitative research strategy was chosen to answer our research question of how car manufacturers deploy their resource base to run their shared mobility business models. With our study, we focused on understanding and explaining the “*how*” and “*why*” of resource deployment of studied OEMs (Yin, 2014) instead of quantifying the number or value of deployed resources (Bryman & Bell, 2015). Thus, a qualitative approach is deemed more appropriate.

##### *Multiple case study*

For this qualitative thesis we adopted a multiple case study for four main reasons. First, the case study method allowed us to go beyond the description of car manufacturers’ resource deployment but rather explore “*how*” and “*why*” the resources are deployed (Yin, 2014; Zainal, 2007). Second, the case study method is suitable because it enables the researcher to learn about contextual conditions the studied unit is embedded into, which are relevant in our theoretical framework (Yin, 2014; Baxter & Jack, 2008). Third, studying multiple cases allowed an analysis of each individual case to highlight individual peculiarities as well as an analysis across all cases to identify similarities and differences (Bryman & Bell, 2015; Yin, 2014). Hence, the method helped us to understand whether “*an emergent finding is simply idiosyncratic to a single case or consistently replicated by several cases*” (Eisenhardt, 1991). Fourth, using multiple cases in a case study yields more robust findings (Baxter & Jack, 2008). Even though these findings are often based on common relationships across most or all cases, thus neglecting relationships within single cases (Eisenhardt & Graebner, 2007), analyzing multiple cases provides greater confidence in the results (Yin, 2012).

##### *Abductive approach*

For this thesis an abductive approach was chosen since we aimed at elaborating on theory by constantly challenging the underlying theoretical framework instead of testing or developing a theory (Flick, 2014). We used theory as a starting point but remained open to adjust the

theoretical framework based on collected data (Alvesson & Kärreman, 2007). Hence, the initial pre-understanding of the phenomenon was not sought to be confirmed or rejected but rather to be elaborated, thus enabling us to “*investigate the theory and the context simultaneously, in a balanced manner*” (Ketokivi & Choi, 2014). Accordingly, our theoretical framework was constantly adjusted to unanticipated data points that were relevant for the understanding of the phenomenon under investigation.

## **3.2 Data Collection**

### **3.2.1 Semi-structured Interviews**

Data were collected through a semi-structured interview mode for two reasons. First, following a methodology of multiple case study research required data to be collected in a way that allowed cross-case comparison (Bryman & Bell, 2015). For this, a general interview guide was created before each interview that comprised a set of key questions building on our theoretical framework (Appendices 1 & 2). Second, the unique features and circumstances of each case needed to be captured, which could not be done through standardized interviews that would not leave space for individual inquiry. Thus, conducting interviews in a semi-structured format enabled us to cover key topics while enabling us to flexibly adapt the order of questions, to ask follow-up questions that dig deeper into a specific direction and to create completely new paths of inquiry as new topics emerged throughout the interviews (Bryman & Bell, 2015). The understandings and inspirations gained were then further integrated into a continuously evolving interview guide.

### **3.2.2 Sampling**

Following a purposive sampling procedure, we aimed at selecting cases that were particularly informative for our research interest (Ishak & Abu Bakar, 2014). For this, a group of manufacturers with diverse positionings in their traditional market and different shared mobility business models was chosen. Within each case company, we identified individuals who could potentially share relevant insights to be those working in senior management, strategy or business development positions in the respective sharing businesses. These people were directly involved in the planning and execution of the sharing offerings. In order to raise potential interviewees’ willingness to participate, we introduced the main interest of our research beforehand. In total a number of six interviews with representatives of five studied car manufacturers was conducted which is in line with Eisenhardt’s (1989) recommended number of cases for multiple case studies. Even though further interviews with additional participants

from case companies could have yielded additional viewpoints, we found the gathered data to be sufficient to analyze cases individually and to compare them with each other regarding our research interest.

In addition to company representatives, we interviewed six mobility experts with experience in advising car manufacturers on developing shared mobility services. Their holistic view and external perspective on shared mobility businesses was deemed beneficial in getting further insights into the resource deployment of OEMs and in understanding the context in which resource deployment takes place (Flick, 2014).

*Table 1: Interview Overview*

Interview Overview					
Participant	Position	Organization	Interview type	Date	Length
<i>Participant 1</i>	Product and Business Development Manager	OEM Alpha	Phone	07/03/2019	60 min
<i>Participant 2</i>	Mobility Strategy Lead	OEM Delta	Phone	07/03/2019	25 min
<i>Participant 3</i>	Senior Car Sharing Consultant	Consultancy	Phone	08/03/2019	70 min
<i>Participant 4</i>	Former Managing Director	OEM Gamma	Face-to-face	12/03/2019	85 min
<i>Participant 5</i>	Mobility Expert and Consultant	Consultancy	Phone	13/03/2019	50 min
<i>Participant 6</i>	Management Consultant	Consultancy	Face-to-face	13/03/2019	50 min
<i>Participant 7</i>	Automotive Director	Consultancy	Phone	13/03/2019	25 min
<i>Participant 8</i>	Manager Corporate Strategy	OEM Delta	Phone	27/03/2019	40 min
<i>Participant 9</i>	Global Market Development Manager	OEM Beta	Phone	01/04/2019	40 min
<i>Participant 10</i>	Partner	Consultancy	Phone	01/04/2019	30 min
<i>Participant 11</i>	Go to Market Coordinator	OEM Epsilon	Face-to-face	11/04/2019	50 min
<i>Participant 12</i>	Mobility Expert	Consultancy	Phone	16/04/2019	30 min

### 3.2.3 Interview Process

All interviews were conducted within a time span of seven weeks and lasted between 25 and 85 minutes. Before each interview, we assured the interviewees of treating all data, including information on the person and the company, confidentially and merely for purposes of this thesis to generate more open and honest answers (Shenton, 2004). Out of twelve interviews,

three were conducted in person and nine via phone. In-person interviews were a valuable data source as they enabled us to immerse ourselves in the company's environment and perceive the interviewees' visual and emotional cues for a more interviewee-centric conversation (Bryman & Bell, 2015). Phone interviews were conducted for geographic and financial reasons but are argued to be a common interview setting in qualitative research (Bryman & Bell, 2015). Not being physically present as interviewers has the advantage that the interviewee would be less affected by our own expressions when we ask questions (Bryman & Bell, 2015).

We conducted the interviews with two interviewers so we could split the interview responsibilities into having one lead interviewer and one observer who would track the overall development and could intervene, for instance with additional questions (Bechhofer et al., 1984). The interviews were digitally recorded and transcribed to serve as a basis for analysis.

### 3.3 Data Analysis

After reading through the transcripts, we obtained an initial overview of mentioned topics. First, we individually coded the data from single interviews following an open-coding practice that was detached from our overall framework and mostly influenced by empirics. In addition to the individual coding, we individually assigned categories to the codes that were guided by our theoretical framework.

Second, we compared identified codes and categories from single interviews with each other. In case of different codes or categories we engaged in discussions regarding the nature of the respective data. This way we either found agreement, adjusted the categories and codes or discarded them if they were not found to be relevant within the scope of the study.

Third, we compared codes and categories across cases through which even new codes and categories emerged (Eisenhardt, 1989). For instance, some interviews yielded the code "*brand*" as part of the category "*existing resources*" which could be further broken down into the codes of "*technological brand*" and "*premium brand*". Based on this comparison, we identified overarching themes that served as a basis for analysis through our theoretical framework in chapter 5.



### **3.4 Quality of Study**

We reflect on the quality of this qualitative study by considering aspects of its trustworthiness (Lincoln & Guba, 1985) which has been found to be a highly accepted construct among researchers to assess the quality of a study. Even though evaluation criteria of quantitative research such as reliability and validity cannot be directly applied in this study, trustworthiness is directed towards capturing similar underlying criteria through considering a study's credibility, transferability, dependability and confirmability.

#### **3.4.1 Credibility**

The credibility of a study considers the extent to which findings match reality (Merriam, 1998). In order to establish credibility, it is important to understand the studied phenomenon in its nature. We attempted to mitigate issues that could negatively affect this study's credibility in three ways.

First, we applied triangulation regarding data sources in our research which involved gathering data from company representatives from different case companies, independent industry experts and secondary industry reports. The multifacetedness of data sources hereby helped us to verify viewpoints and critically question specific assertions from one data source if they were differing from another one (Shenton, 2004). Second, we applied iterative questioning (Shenton, 2004) and member checks in data collection (Lincoln & Guba, 1985). Conducting interviews in a semi-structured way enabled us to return to previously addressed issues of interest by rephrasing questions and thereby identify whether the statements made by the participant were consistent. This way, we were able to discard or discuss any data that did not seem to be accurate. Furthermore, we regularly checked with interview participants during the interviews whether obtained understandings of an issue were accurate and gave them the opportunity to clarify their standpoints. Third, our own background with an interest and experience in the automotive industry added to our ability to conduct both data collection and analysis in a contextually aligned way through which we expected results to be more credible (Patton, 1990).

#### **3.4.2 Transferability**

The transferability of a study considers the extent to which findings can be applied to contextual settings that are different from the originally regarded one (Merriam, 1998). We attempted to mitigate issues regarding the transferability of our findings in three ways.

First, we aimed at providing sufficient contextual information of studied cases and the study itself to the reader (Guba & Lincoln, 1989). Through this, other researchers might be able to establish relationships with their own fields and to discover respective application scenarios of our findings. Second, we applied purposive sampling that allowed a diverse group of cases regarding the OEMs' shared mobility business models and positionings to be analyzed. Since the foundation of our generated findings lies in a multitude of different cases, we expect a higher degree of applicability within other OEMs' contexts compared to findings from a specific single case (Merriam, 2009). Third, the theoretical framework applied in this thesis was built up from different theoretical streams and regarded the sharing economy as a locus of analysis. The findings from this study are highly in line with this framework even though the latter was not particularly delimited to the application in an automotive context. Thus, the fit of the specific cases of car manufacturers into the overall framework points out that other empirical contexts that are affected by the sharing economy, such as the hospitality industry, might also benefit from the findings of this study.

### **3.4.3 Dependability**

The dependability of a study considers the extent to which similar findings would be obtained if a study was replicated in the same contextual setting with the same participants and same methods (Shenton, 2004). We attempted to mitigate issues regarding dependability by reporting details of this study's research process (Flick, 2014). This encompasses outlining the overall research design in this thesis, explaining how data was collected and analyzed as well as reflecting on the quality of the study. In addition, we kept records of all interview data to be able to refer back to it at later stages and expose ourselves and others to original statements.

### **3.4.4 Confirmability**

The confirmability of a study considers the extent to which perceptions and skills of the individual researchers affect the research process and outcome (Shenton, 2004). We attempted to acknowledge the influence of our beliefs and understandings in the study. For instance, the initial interview guide that served as a base for data collection was largely shaped by our individual understanding of the field and related theory. Thus, the gathered data partially depend on the thematic foci that we set in the interviews. However, we tried to mitigate this issue through triangulation. Integrating understandings stemming from multiple sources of data after discussing them with each other added to a continuously evolving interview guide. This way we could confirm the importance of particular thematic directions while neglecting others that were found to be less relevant.

## 4. Empirical Findings

This chapter presents the study's empirical findings. In section 4.1, general insights from mobility experts and industry reports set the scene for the individual case introductions in section 4.2.

### 4.1 Setting the Scene

#### 4.1.1 New Opportunities and Threats

Various mobility experts from our interviews as well as industry reports stated that shared mobility services such as ride-hailing and car sharing represent a major trend that will impact the way OEMs are doing business, among developments in e-mobility, autonomous driving and connectivity solutions (PwC, 2017; McKinsey & Company, 2016). Within this trend, shared mobility services pose both threats and opportunities to OEMs in the short and long run (Deloitte, 2017a).

It was frequently recognized that OEMs could use shared mobility services as marketing tools by strengthening relationships with existing customers and building relationships with new ones.

*“Shared mobility services allow for reaching new customer groups, for instance people who would not necessarily buy a car but are able to spend a few Euros flexibly, depending on their need for mobility. This way they can reach new customer groups but also tie their existing customers closer to the brand and the service.”* - Participant 7

Further, shared mobility services represent a huge business potential. If they are run efficiently, the common concern of OEMs of not being profitable could be overcome with margins higher than in the traditional business.

*“Throughout the whole lifecycle of a vehicle of around 10-12 years, they can make more money with it. [...] OEMs can capture significantly more value from the vehicle.”*  
- Participant 10

Even though the new services come with promising prospects, there was a consensus among mobility experts that the traditional business of OEMs will be negatively affected in the long term, with an uncertain degree of declines in new car sales.

### 4.1.2 Strategic Positioning and Business Modelling

In order to mitigate risks and build on opportunities that shared mobility services bring, a key question OEMs have to ask themselves is whether they want to play an active role in shaping the future of mobility or leave the market to other players. For this, they have to consider how to transform their strategy and business model (Deloitte, 2016). As the foundations of the future are built now,

*“It is important to form a customer base, lock people into the service and be prepared for more and more providers offering sharing solutions. [...] Otherwise you risk to end up as a pure hardware supplier.” - Participant 7*

There are several roles OEMs can play in the shared mobility market (Deloitte, 2017b). Besides being a pure hardware provider for other service operators, OEMs can develop and run their own services. Alternatively, they can focus on a few elements of a shared mobility business while outsourcing other responsibilities such as maintenance and repair to other parties.

*“They can sell cars to a car sharing company without further being involved, operate their own car sharing company completely on their own, or run their own business and let others take care of service and maintenance.” - Participant 6*

Whereas some OEMs such as BMW and Daimler entered the sharing space relatively early, others are at least about to develop and launch their services. Without concretely knowing which business model works for them, different models are tested.

*“I don’t know any manufacturer that is not active in some way. It is part of the deal and also part of the investor story to deal with these topics without having a clear picture of where this is leading to.” - Participant 10*

### 4.1.3 Resource Deployment in the New Service

In building up new business models, it is especially important for OEMs to evaluate how existing resources can be used and to tailor the service to specific market requirements and conditions (Deloitte, 2016). In addition, shared mobility services require OEMs to acquire a new set of resources.

*“The OEMs have to learn a lot - it is much more software business, service business and fleet management - and the OEMs have to evolve to get there.” - Participant 7*

Even though there are several required resources in running a shared mobility service that are new to OEMs, many of these companies already partly rely on existing resources from their core business. OEMs are directly in control of the design and manufacturing of cars which are at the core of shared vehicle services. Also, political processes are often a hurdle when it comes to launching mobility services and getting cars on the road. Relational networks can be helpful to overcome this hurdle and to get good deals with public stakeholders. Once a service is launched, knowledge generated from OEMs' leasing and fleet management subsidiaries can be beneficial in operating the mobility service. While these are just a few examples of how existing resources can be deployed in new mobility services, there are often still resource gaps to be filled to operate these services and mostly, each OEM is deploying its resources in a different way.

## **4.2 Case Introduction**

This section introduces the five studied case companies. Due to confidentiality reasons, company names are not disclosed and instead replaced by Alpha, Beta, Gamma, Delta and Epsilon. Case information were predominantly gathered from interviews with managers of the OEMs' shared mobility units and complemented with secondary information. Each case is introduced in four steps. First, the OEM's perception of the sharing economy and its reasons to offer a service are depicted. Second, the strategic position and organizational setup each OEM takes with its shared mobility service is pointed out. Third, an overview of the new business model employed is given. Fourth, it is described which resources are deployed from the traditional business model in the new shared mobility business model.

### **4.2.1 OEM Alpha**

#### **Perception and Reasons to Join the Sharing Economy**

At OEM Alpha, shared mobility services are regarded as a major opportunity stemming from an observed change in consumer behavior. While it has been recognized that the long-term success of the company's traditional business might diminish, Alpha identified that it possesses unique means to actively participate in the sharing economy and drive the development of new services in the domain.

*“There are lots of changes in users’ behavior, the way they are consuming. If we still want to be here, we need to adapt our business to what people need. [...] But it is definitely an opportunity and I think this is due to the fact that we feel we have the resources to be part of it.” – Participant 1*

## **Strategic Positioning and Organizational Setup**

In its traditional business environment, Alpha is a volume manufacturer and focuses on producing and distributing a broad portfolio of affordable cars. Strong commitments have been made towards developing technologies of electric vehicles (EV) and towards driving EV adoption among consumers.

The company’s strategic positioning in the sharing economy is built around sustainable mobility that everyone can access, for which the company’s EVs are of central importance. In its shared mobility efforts, the company is predominantly using EVs through which it is aiming at bringing more EVs to cities and at achieving future leadership in electric mobility.

*“We have this target to provide new mobility for everyone in a sustainable way. [...] What is our strength in this is our product portfolio. We have been selling electric cars for a while and today this basically helps us. We have kind of a step forward and the electric cars are really relevant for the sharing economy.” – Participant 1*

The importance of EVs in Alpha’s strategic positioning has been put into practice on an organizational level by creating departments that combine the development of new mobility solutions and electric cars. This enables more efficient development processes and is set up in individual market organizations that oversee local activities and report to corresponding departments on a corporate level.

*“We have dedicated departments both at regional level but at corporate level as well. So it is something that is really clear in the strategy of the company that we need to adapt our structure to where we want to go and what we want to deliver.” - Participant*

1

## **New Business Model**

Alpha’s business model for the sharing economy has been internally developed and is based on station-based car sharing in which a number of vehicles from Alpha’s portfolio is set up at electric charging stations. Customers can book cars via an app and unlock them with a digital

key at designated stations. The price depends on the vehicle type with a fixed starting fee covering a base distance and variable fees per additional kilometer. After the ride, the vehicle has to be dropped at a station. With this service, Alpha wants to provide an affordable and sustainable mobility solution to everyone.

### **Deployed Resources in the New Business Model**

Alpha deploys several existing resources from its traditional business model in its new shared mobility business model. On an organizational level, dedicated departments were created for the purpose of driving the company's EV and shared mobility developments. Within these departments, a large number of employees was sourced internally. Hardware-wise, the company's decade-long EV expertise led to a wide EV portfolio with a high production volume that allows using a large fleet of EVs in shared mobility services. Even though most vehicles used in other companies' shared mobility services were not originally designed for this setting, Alpha's EVs are stated to be highly suitable for the sharing economy with relatively low development and production costs as well as a small size. The service's naming is strongly associated with the OEM and makes use of the car brand's position as an electric vehicle leader. Software-wise, Alpha possesses relevant digital and information-technology competences through which it can equip its vehicles with connectivity systems and develop scalable mobile applications. Finally, the new business model's operational side is building on Alpha's existing value chain by integrating maintenance and repair networks. In case of damage or tire changes, the contract partners within the value chain network do not have to be sourced again for the new business model so that it benefits from price and service deals that were already made with these existing partners.

#### **4.2.2 OEM Beta**

##### **Perception and Reasons to Join the Sharing Economy**

Relying on internal and external market analyses, OEM Beta found that owning cars will become less attractive for consumers while there are opportunities to build a business in the sharing market. This conclusion goes in hand with overall developments of autonomous driving, electrification and connected systems that are regarded as mutually reinforcing drivers. Beta perceives itself as a late follower in shared mobility services and is now trying to proactively build the market and to gain respective market shares.

*“There will be less ownership and more sharing which other long-term concepts such as autonomous driving and so on are adding to. We thought we could either quietly*

*observe how other companies take the market or we do something on our own.” - Participant 9*

## **Strategic Positioning and Organizational Setup**

Beta is a multiple brand group with both volume and premium brands. From a financial perspective, it is recognized that a large portion of future revenues will still come from vehicle sales. However, establishing a business that is not built on vehicle sales has been defined as a core strategic issue over the upcoming years in order to become one of the first companies worldwide to offer commercially operated autonomous shared services. For this, it has been recognized that a fundamental shift in thinking from a vehicle view, focusing on performance and features, towards an urban planning view is crucial. As part of its strategic positioning, Beta is creating ventures that develop technologies and insights in autonomous driving, electric vehicles, connectivity and particularly shared mobility services. Beta has set up its shared mobility service unit as a fully-owned but independent subsidiary that is organizationally separated but located in proximity to one of the group brand’s global headquarters.

## **New Business Model**

Beta operates an internally developed ride-sharing mobility service through its subsidiary for which the parent provides a large modified vehicle with an electric engine. Customers can enter their destination in an app for which they will be suggested a route that is matched with other customers who travel on similar routes. A distance-based price suggestion is given that will not be affected by delays caused by traffic jams or route changes. After accepting the route and price, every customer is picked up at a nearby service station and brought to its chosen destination. With this service, Beta wants to address everybody who is using multimodal transport to either serve as a complement to existing transport options or substitute some of them, with car owners being a core target group.

*“We will test and experiment a lot, probably also shut down some things again, pivot and find another direction. With our current service we want to address masses and aim at making private car ownership less attractive.” - Participant 9*

## **Deployed Resources in the New Business Model**

Beta is deploying several resources from its core business to develop, launch and operate its shared mobility service. From a hardware perspective, Beta applies its competences in designing and manufacturing vehicles. The shared mobility service subsidiary is accessing the



wider group of sub-brands associated with Beta, adopts their vehicle types and modifies them into purpose vehicles.

*“Today, many vehicles that you see in other shared services are actually designed for private ownership. The future trend will be to develop shared purpose vehicles just for mobility services like ours and we are already part of this. Here, it is extremely helpful to have all the knowledge and the engineering power as well as the production capacity from our group, so that we are actually able to get purpose vehicles on the road, from design to mass production.” - Participant 9*

Building on the group’s vehicle development expertise, the shared mobility service is also making use of Beta’s strong EV position by running the whole service electrically. Besides using its designing and engineering competences, Beta is providing extraordinarily high amounts of financial resources to the shared mobility service team, through which the latter can focus on the further service development and rollout rather than finding investors.

*“If there is a benefit of such a large corporation, it is deep pockets. We do not have to do series A, B or C rounds but are sponsored and cross-subsidized.” - Participant 9*

Finally, Beta’s shared mobility service benefits from the parent’s access to relevant stakeholders in two ways. On the one hand, political stakeholders are accessed more easily through lobbyism activities and internal networks.

*“There are many colleagues around the world who have their networks and contacts and we can leverage that to get on the same table with people. Through this, you get direct access to city representatives, legislators, ministries or other people who act as gatekeepers. We also have a network of lobbyists who don’t do anything else all day than building up and maintaining relationships and networks.” - Participant 9*

On the other hand, user groups for tests or launch phases are sourced from Beta’s own employee base as the subsidiary is located in proximity to one of Beta’s sub-brands.

*“We also have one of the group’s headquarters here with many employees, which is a good strategy user group for us, that we use for purposes of testing.” - Participant 9*

### 4.2.3 OEM Gamma

#### Perception and Reasons to Join the Sharing Economy

OEM Gamma can be regarded as an early mover in building shared mobility services. It was found that offering these services can enhance Gamma's positioning while it also possesses relevant resources for developing them. Gamma's long-term success in its traditional business is not perceived as threatened, it was rather competitor activities in sharing services and the overall opportunity recognition that led Gamma to join the market.

*"I believe Gamma saw the trends even earlier than the general public. Rather than digging in and say "No, we produce cars! The margin just disappears", Gamma said "Let's go in there and see how we can capitalize and be part of that new economy.""* - Participant 4

#### Strategic Positioning and Organizational Setup

In its traditional business environment, Gamma is a premium manufacturer and introduced its first EV line years ago. For its sharing services, Gamma aims at positioning itself as a premium individual mobility supplier, focusing on the overall driving experience. In the long run, Gamma wants to generate substantial shares of its revenues from sharing services and wants to grow the new business into the company's future core by setting up a complementary sharing business model.

Gamma has established a fully-owned but independent subsidiary to develop shared mobility services under an own brand to enable more dynamic and fast-paced development processes. The subsidiary is organized into individual market organizations which report to the head subsidiary. Thus, regional subsidiaries are not legally related to Gamma's regional corporate offices.

#### New Business Model

Gamma's business model for the sharing economy has been internally developed and is based on free-floating car sharing in which a range of small- to mid-size vehicles from Gamma's portfolio is used. Customers can book nearby cars via an app which then can be picked up and dropped anywhere within a certain area. The price depends on both the vehicle type and the time the car is used. With this service, Gamma wants to provide a premium mobility experience for its existing premium customers and also addresses new customer groups who might not be able to afford private car ownership of these vehicles yet.

## Deployed Resources in the New Business Model

Gamma's new business model is relying on several resources from Gamma's traditional business of producing and selling cars. First, Gamma's subsidiary is sourcing employees directly from its parent such as its C-suite. Second, hardware and technology employed in the new business model are largely based on Gamma's model options, its fuel-based and electric cars and built-in telematics solutions.

*"There is a very very tight relationship regarding the fleet mix and the options on the cars. All vehicles are now equipped with a SIM card, those kind of technology integrations can of course be collected and utilized."* - Participant 4

Third, Gamma deploys its brand in the new mobility service as it pursues to become a leading premium individual mobility provider. For this, its position as a high-end manufacturer is seen as advantageous. Even though the sharing service is named under an own brand, the vehicles on the street add to Gamma's brand visibility.

*"We create our own brand but it is highly connected with Gamma. What the brand brings is security. I saw this as a big benefit when we tried to integrate and implement the service in a new market. So there is a benefit in being a big manufacturer and well-known brand. It is a service from Gamma and if you know that we have good products, you wouldn't believe we would put a poor service on the market."* - Participant 4

Fourth, Gamma's market and service knowledge are key factors in the new business model. Before entering a new market, Gamma's market research department evaluates the local potential and gives recommendations for tailoring the service offering. Furthermore, Gamma's leasing activities are regarded as beneficial to the shared service as the parent acquired considerable knowledge in service operations. Finally, the knowledge accumulated by running the service in other markets is used to launch in new cities, which adds to efficiency.

*"When we started in a new market, we got Gamma's blueprint. The app was working, the cars and technology integration and then we learned that little parts of the business could be done differently, let's twist that a bit."* - Participant 4

Besides, the shared mobility subsidiary makes use of Gamma's political resources. Political actors are relevant to negotiate deals for parking spaces or to set upper limits for the maximum

number of vehicles that are used in the service. As Gamma has historically run several projects with some cities it is operating in, the political connections led to better negotiation outcomes and faster processes.

Finally, Gamma's subsidiary benefits from accounting opportunities that arise from the embedded relationship between the subsidiary and Gamma, through which it can realize cost advantages.

*"If Gamma has unused capacities, they put some of the vehicles into the sharing market. That means they handle the accounting differently than another service operator who might have to purchase the vehicles as a customer and does not have the economies of scale that Gamma has."* - Participant 5

#### **4.2.4 OEM Delta**

##### **Perception and Reasons to Join the Sharing Economy**

Seen as one of the major challenges of the future, at OEM Delta shared mobility services are addressed with mixed feelings. Changes in consumer behavior and future mobility plans of cities made Delta think about offering alternative mobility solutions that go beyond manufacturing and selling cars.

*"There are lots of opportunities for us and our attitude is very positive. But the business logic, that's where people have doubts and some are even afraid of it. [...] In the end, I think the opportunity outweighs and with careful and sustainable thinking I am sure it is an exciting new business field for us."* - Participant 2

##### **Strategic Positioning and Organizational Setup**

As a premium car manufacturer with a strong brand, Delta's strategic position in the sharing economy circulates around the fundamental belief that their core business will hardly be affected by the shared mobility services. Instead of offering services that aim at replacing private car ownership, Delta focuses on alternative individual mobility solutions that enable their customers to experience and try out different cars of its portfolio, hence serving as a sales and marketing tool, or use them in situations when private car ownership comes along with pain points. Accordingly, the new mobility solutions are seen as a complement to the traditional business.

*“Premium customers will still own a car in the future and only make use of shared mobility services from time to time. [...] In comparison to volume manufacturers, we believe that our core business will not be heavily impacted.” - Participant 8*

In order to develop new mobility services, a daughter company was founded that is fully-owned by Delta. The service business is organizationally and geographically separated from the core business to enable the new unit to work faster and independently.

## **New Business Model**

The new business model of Delta has been internally developed and is based on the idea of making premium car rental as convenient as possible. Via a web page or an app, the customer can book a car of Delta's current product portfolio including both electric and fuel-based vehicles which is picked up at a certain station. The rental period can last between a few hours and several weeks. Together with the car type it also determines the price the customer has to pay. Other services such as personal assistance when picking up the car aim at making the car rental a premium experience for the customer. The main target group of the service remains Delta's current customers. New customer groups such as young drivers or people who normally cannot afford a premium car but occasionally want to use it are also addressed with the rental service.

## **Deployed Resources in the New Business Model**

The new business model partly relies on the resource base of the organization's core business. At the moment, electric and fuel-based vehicles of Delta's current product portfolio are used as rental cars for the service. Although being geographically and organizationally separated from the core business, the new mobility unit is funded by Delta. Experiences and learning from the Delta's fleet and leasing business help to avoid failures and develop and run the new mobility solutions more efficiently. Partnerships of the parent company are advantageous to develop and operate the new business model. Additionally, the broad dealer network is used to reach out and offer the service to customers. By doing so, Delta tries to make use and monetize its current customer base. Although the service business has been described as new for Delta, the “classic” car service such as maintenance and repair of vehicles is also leveraged in the new service business. Having a strong and trusted premium brand in its core business benefits the company to not only sell the services to customers but also to attract talents and new employees to fill competence and skill gaps.

*“We have a strong premium brand. People know what we are standing for. And they trust us. [...] It will definitely help us in our new service business.” - Participant 8*

#### **4.2.5 OEM Epsilon**

##### **Perception and Reasons to Join the Sharing Economy**

When the first OEMs started to launch shared mobility services, Epsilon did not set these services too high on its agenda. Meanwhile, the perception has changed and the organization has recognized that reacting to the change in consumer behavior is essential for the company's future existence. The organization is convinced that in the future individual mobility of many consumers does not necessarily contain private car ownership. Accordingly, Epsilon wants to take an active role in shaping the shared mobility market that is described as offering a huge potential to run a large-scale profitable business.

##### **Strategic Positioning and Organizational Setup**

Being a premium car manufacturer in its core business, Epsilon is aiming at gradually replacing the traditional business of the company with profitable shared mobility services.

*“So, I definitely see that whatever we are doing is also competing with the traditional business. And increasing the whole pie in the shared economy obviously converts car owners into non-car owners which for the traditional car business is not the ideal scenario.” - Participant 11*

The strategic positioning is based on a very consumer-centric approach with a strong focus on the personal experience of the individual consumer. Instead of measuring the success of the company by the number of new cars sold, in the future a strong performance indicator will be the number of customers and how they are using the mobility services of Epsilon.

*“I think we are very much talking about personal experience. And the personal experience is where we can actually be better than the car industry. Because if you have one car, that car will very few times be the right car for your purpose. [...] That also implies that we shouldn't focus on the number of cars, we should focus on the number of customers and their individual needs.” - Participant 11*

To avoid being influenced and guided by the parent company, the new mobility unit of Epsilon is geographically and organizationally separated from the rest of the organization and run as a new venture.

*“We want to build something new and not be dragged down by the enormous size and slow processes that come along with a huge corporation. Even our brand is not connected.”* - Participant 11

## **New Business Model**

Epsilon’s new business model has been internally developed and is based on a station-based car sharing system. To meet the different needs of its customers, Epsilon uses several cars – ranging from small to large size - of the current product portfolio for its shared service. Cars are reserved via an app and picked up at a station which is chosen out of a pool of predefined locations. After usage the car has to be brought back to the same station where it was picked up. The pricing is based on a monthly subscription fee to have access to the service and a variable fee which is determined by the duration of individuals trips. The station-based service addresses both existing customers of Epsilon and new customers demanding a shared mobility service that is tailored to their individual needs and preferences.

## **Deployed Resources in the New Business Model**

For its new business model, Epsilon deploys vehicles of its current product portfolio. By regularly proving that the business case of the new mobility service is profitable and scalable, Epsilon’s mobility venture receives funding from the parent company to grow and expand. Moreover, the new mobility unit leverages already existing partnerships and deals that have been made by the parent company - an example is benefitting from the contract conditions for software licenses that were negotiated by Epsilon.

Employees having had executive positions in the core business, are employed by Epsilon’s new mobility unit to guide the venture with their expertise and knowledge. Their far-reaching network which also is closely tied to the current executive board of Epsilon is utilized to get through important decisions regarding the new mobility service. Although their brand is not connected to their core business, Epsilon expects that the new venture partly will benefit from being related to the parent company when getting in dialogue with legislators.

#### 4.2.6 Overview of Studied OEMs

Table 2 depicts an overview of studied OEMs.

*Table 2: Overview of Studied OEMs*

	<b>Alpha</b>	<b>Beta</b>	<b>Gamma</b>	<b>Delta</b>	<b>Epsilon</b>
<b>Perception of the Sharing Economy</b>	Mixed feelings – opportunity outweighs	Threat	Opportunity	Mixed feelings – opportunity outweighs	Threat
<b>Strategic Positioning in the Sharing Economy</b>	Sustainable mobility for everyone	Reduce car ownership and be first commercially operating shared autonomous service	Premium individual mobility	Premium individual mobility	Personal, safe and flexible mobility that gradually replaces traditional business
<b>Organizational Setup</b>	Dedicated departments within Alpha	Subsidiary	Subsidiary	Subsidiary	Subsidiary
<b>New Business Model</b>	Station-based car sharing	Ride-sharing	Free-floating car sharing	Premium car-rental	Station-based car sharing
<b>Mode of Development</b>	Internal Development	Internal Development	Internal Development	Internal Development	Internal Development



## 5. Analysis

In order to answer the research question of this thesis, this chapter analyzes the empirical findings by applying the theoretical framework described in section 2.7. The chapter is divided into three sections. Sections 5.1 and 5.2 aim to facilitate the analytical process by categorizing deployed resources (5.1) and assigning them to underlying deployment processes (5.2). Building on the findings of sections 5.1 and 5.2, section 5.3 analyzes in detail “*how car manufacturers deploy their resource base to run their shared mobility business models*”.

### 5.1 Categorization of Deployed Resources

The empirical findings reveal that a wide range of diverse resources is deployed in OEMs’ shared mobility solutions. To facilitate the analytical process and to get an overview of the deployed resources, we assigned the resources to Grant’s (1991) six suggested resource categories - financial, physical, human, technological, reputational and organizational (table 3). Additionally, within each category, we compared resource deployment across cases.

*Table 3: Resource Categorization*

Category	Alpha	Beta	Gamma	Delta	Epsilon
<b>Financial</b>	Funding Accounting & Taxation	Funding Accounting & Taxation	Funding Accounting & Taxation	Funding Accounting & Taxation	Funding Accounting & Taxation
<b>Physical</b>	Electric vehicles	Purpose vehicles	Fuel-based and electric vehicles	Fuel-based and electric vehicles	Fuel-based and electric vehicles
<b>Human</b>	Workforce transfer	Workforce transfer Large number of employees as user groups	Workforce transfer	Workforce transfer	Workforce transfer
<b>Technological</b>	Connectivity systems EV expertise	Connectivity systems EV expertise Purpose vehicle development	Connectivity systems EV expertise	Connectivity systems	Connectivity systems
<b>Reputational</b>	Brand as EV leader	Access to relevant political stakeholders	Premium brand Access to relevant political stakeholders	Premium brand Employer brand Customer base	Access to relevant political stakeholders
<b>Organizational</b>	Service network (repair & maintenance)	Multi-brand access (e.g. cross-financing of technological developments)	Fleet management and leasing know how Blueprints for new markets Market research, analytics	Service network (repair & maintenance) Fleet management and leasing know how Partner network Dealerships	Partner network Deals (e.g. software license)

*Financial* and *human* resources are deployed in similar ways among all cases. From a financial side, OEMs invest heavily into their shared mobility units through which the latter have higher liquidity and do not experience pressure from seeking external funding. Within each case, the shared mobility units' workforce is partially directly deployed from the OEM which is particularly apparent on a senior manager and C-suite level.

*Physical* resource deployment is completely based on vehicle usage. Whereas most of the studied OEMs exclusively rely on their existing vehicle portfolio, *Beta* has developed a purpose-vehicle that is tailored to its shared mobility service.

*Technological* resource deployment shows that overall industry trends are captured in all shared mobility services. In particular, connectivity systems are frequently deployed while electric vehicle expertise is relevant in a few cases.

*Reputational* resources are deployed through brand and relationship. In their shared mobility services, OEMs deploy their brand in two ways. They either directly use the car brand in the service or use their advanced standing in certain technologies such as electric vehicles. Relationships are deployed to get access to and have an advantageous negotiation position with relevant political stakeholders.

There are major differences in the deployment of *organizational* resources among cases. These differences encompass three main areas - usage of partner and service networks, knowledge and experience transfer as well as leaning on the overall organizational structure to develop the service offering, for instance through access to new technologies from other units.

## **Concluding remarks**

The resource categorization shows that

1. Every studied OEM deploys existing resources of all resource categories in its shared mobility services which indicates that their resource base is highly relevant in its new business model.
2. Similar resources are deployed within the categories financial and human among all studied OEMs.
3. Within the categories physical, technological, reputational and organizational there are differences with regard to resource deployment among OEMs.

## 5.2 Deployment Processes

As a second analysis step, we assign identified deployed resources to deployment processes of reconfiguration, leveraging, learning and integration (Bowman & Ambrosini, 2003), as shown in table 4. These processes represent the OEMs' dynamic capabilities of seizing as a mobilization of resources to delineate and run a new business model (Teece, 2007).

Table 4: Resource Deployment Processes

Deployment Process	Resource Category	Alpha	Beta	Gamma	Delta	Epsilon
<b>Reconfiguration</b>	<i>Physical</i>	Electric vehicles	Purpose vehicles	Fuel-based and electric vehicles	Fuel-based and electric vehicles	Fuel-based and electric vehicles
	<i>Human</i>	Workforce transfer	Workforce transfer Large number of employees as user groups	Workforce transfer	Workforce transfer	Workforce transfer
<b>Leveraging</b>	<i>Technological</i>	Connectivity systems EV expertise	Connectivity systems EV expertise Purpose vehicle development	Connectivity systems EV expertise	Connectivity systems	Connectivity systems
	<i>Reputational</i>	Brand as EV leader	Access to relevant political stakeholders	Premium brand Access to relevant political stakeholders	Premium brand Employer brand Customer base	Access to relevant political stakeholders
	<i>Organizational</i>	Service network (repair & maintenance)		Market research, analytics	Service network (repair & maintenance)	Partner network Deals (e.g. software license)
<b>Learning</b>	<i>Organizational</i>			Fleet management and leasing know how Blueprints for new markets	Fleet management and leasing know how	
<b>Integration</b>	<i>Financial</i>	Funding Accounting & Taxation	Funding Accounting & Taxation	Funding Accounting & Taxation	Funding Accounting & Taxation	Funding Accounting & Taxation
	<i>Organizational</i>		Multi-brand access (e.g. cross-financing of technological developments)			

## **Reconfiguration**

Reconfiguration is the underlying resource deployment process for all *physical* and *human* resources. By recombining existing resources (e.g. equipping a car with a connectivity system that enables the customer to open the car remotely via an app) OEMs modify their vehicles to tailor them to their new mobility services. *Human* resources are deployed by forming teams for their new mobility units that consist of both employees of their traditional business and externally hired people.

## **Leveraging**

Most of the resources are directly replicated from OEMs' traditional businesses into their new shared mobility services. Whereas leveraging is the underlying resource deployment process for all *technological* and *reputational* resources, *organizational* resources are only partly leveraged. Technological knowledge such as electrification and connectivity know how are applied in both vehicles that are sold to customers and vehicles that are used for mobility services. Similarly, the brand of the studied OEMs is extended from the traditional to the new mobility business. The replication of *organizational* resources mainly refers to leveraging service and partner networks that are used to run the shared mobility services.

## **Learning**

Resources are rarely deployed through learning processes from an OEM to its shared mobility business. The findings reveal that only in two cases OEMs use learning processes to deploy their *organizational* resources, that is know how generated from previous leasing and fleet management activities or experiences from entering markets which are used when it comes to new market launches.

## **Integration**

Among all OEMs *financial* resources are deployed through integration processes, that is holistically running the new business by coordinating its resources. OEMs provide funding to their shared mobility businesses which needs to be allotted within the respective unit to cover costs that emerge from service development and operation. Also, accounting and taxation opportunities arise from running an additional service business and OEMs flexibly coordinate their asset positions among businesses to realize savings and cost advantages, for instance through internal leasing agreements. Another category deployed through integration processes is *organizational* resources which enable the shared mobility business of one OEM to access technological advancements that are made by other brands in the wider OEM group.

## Concluding remarks

The analysis of underlying resource deployment processes shows that

1. Studied OEMs mainly directly leverage their existing resources into their new shared mobility services. Reconfiguration and integration processes are applied by all studied OEMs whereas resource deployment is rarely based on learning processes.
2. Studied OEMs all use the same deployment processes for individual resource categories except for organizational resources. Still, the resources deployed within one resource category differ across cases.

## 5.3 Determinants of Resource Deployment

Whereas section 5.1 and 5.2 aim to facilitate the analytical process, this section answers our research question of “*How do car manufacturers deploy their resource base to run their shared mobility business models?*”.

The previous two analysis steps show that OEMs deploy the same resource categories as well as mostly use the same underlying deployment processes for these categories. They also clearly point out that within each resource category there are differences with regard to which individual resources are deployed by the studied OEMs. These differences cannot be explained by sections 5.1. and 5.2 as these two analysis steps are not sufficient to understand *what* determines resource deployment and *why* each OEM deploys a unique set of resources into its shared mobility service. In order to identify and analyze the determinants of resource deployment and the differences with regard to resource deployment across studied cases a further integration of our theoretical framework into the analysis is necessary.

### 5.3.1 Resource Compatibility of Business Models

Based on our theoretical framework, we identified two determinants of resource deployment within a business model portfolio to be the resource base of the traditional business model and the required set of resources of the new shared mobility business model.

#### **Determinant 1 – Resource base of traditional business model**

The first determinant of an OEM’s resource deployment is the resource base of its traditional business model as it limits the pool of resources that can potentially be deployed. This resource base of an OEM has been shaped over time by its prior paths and decisions such as investments in certain technologies (Teece et al., 1997). Accordingly, the resource bases of these companies

differ which is in line with Teece et al.'s (1997) explanation of resource heterogeneity across firms. To put it simple with the words of participant 1: *“If you don't have the car, you can't use the car.”*

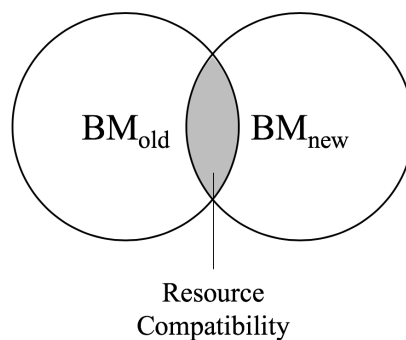
### **Determinant 2 – Required set of resources of new shared mobility business model**

The second determinant of resource deployment is the required set of resources of the new shared mobility business model of the OEM. Developing and running a shared mobility business requires an OEM to possess a certain set of resources which is defined by the nature of the business model (Ritter & Schanz, 2019; Bocken et al., 2014; Teece, 2010). Since there are differences in the new shared mobility business models of all OEMs, the sets of required resources differ across cases.

*“When you are starting a new service like this, you really have to think about what you need in order to run it.”* - Participant 10

### **Resource Compatibility**

Looking at determinant 1 and 2 separately does not explain the deployment of a specific resource. Instead, the co-existence of both business models in an OEM's business model portfolio has to be considered (Markides & Charitou, 2004). By building on Casadesus-Masanell and Tarzizán (2012) we found that resource compatibility between traditional and new shared mobility business model explains the deployment of a specific resource. Resource compatibility describes the extent to which the resource base of the traditional business model is intersecting with the required set of resources of the new shared mobility business model, as shown in figure 8. Whereas a resource of the traditional business that lies within the intersection is deployed in the new shared mobility business model, a resource that lies outside the intersection is not.



*Figure 8: Resource Compatibility Between Business Models*

### 5.3.2 The Role of a Firm's Strategic Positioning in Resource Deployment

We found that resource compatibility between traditional and shared mobility business model explains which individual resources are deployed. Since the traditional business model relies on a resource pool that is relatively fixed in the short term (Teece et al., 1997), it is the resource requirements of the new business model that determine the degree of compatibility between both business models variably. Consequently, varying resource deployments among OEMs can be explained by both *different existing resource bases* as well as *different resource requirements* in new business models. While the RBV explains why resource bases are heterogeneous, we will further integrate our theoretical framework to analyze why resource requirements in new business models differ among OEMs. The specific examples of brand deployment as a reputational resource and vehicle deployment as a physical resource are used for this as they show strong similarities and differences across cases.

#### Brand Deployment

There are OEMs which directly leverage their brand as a compatible resource into the sharing business (Alpha, Gamma, Delta) while others do not deploy their brand at all (Beta, Epsilon), which is depicted in figure 9.

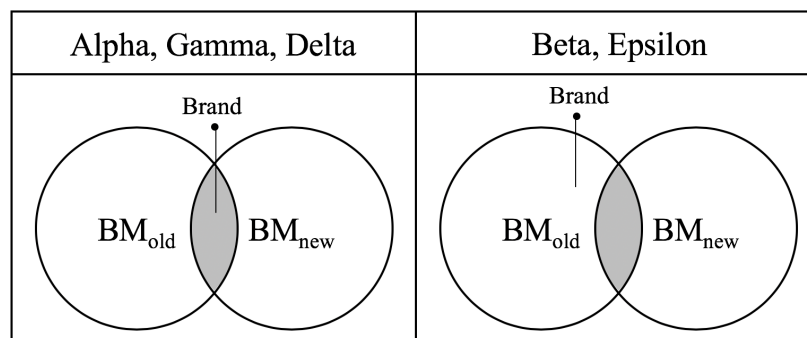


Figure 9: Brand Compatibility

Following the previous logic, it is evident that in group 1 the existing brand is compatible with both business models and matches the resource requirements of the new business model while in group 2 the brand is not compatible. To account for this difference in resource requirements of the new business model, we consider an OEM's strategic positioning in the sharing economy according to our framework, as it is directly shaping which new business model will be employed and which resources are required to run it. As participant 7 states: "*The concrete business model employed by the OEMs depends on how they position themselves*". Table 5 gives an overview of the different brand deployments among OEMs and their respective strategic positioning.

Table 5: Brand Deployments and Strategic Positioning

OEM	Strategic Positioning in SE	Brand Deployment	Participant Insights
<b>Alpha</b>	Sustainable mobility for everyone	EV leader	<i>"We have this target to provide new mobility for everyone in a sustainable way. [...] We want to keep the leadership in the electric car sharing market, that is a really good brand builder as well to have these cars visible in the cities."</i> - Participant 1
<b>Gamma</b>	Premium individual mobility	Premium	<i>"We have the strategy of being number 1 supplier of premium individual mobility. [...] If you know that we have good products, you wouldn't believe we would put a poor service on the market."</i> - Participant 4
<b>Delta</b>	Premium individual mobility	Premium	<i>"We have a strong premium brand. People know what we are standing for. And they trust us. [...] It will definitely help us in our new service business."</i> - Participant 8
<b>Beta</b>	Reduce car ownership and be first commercially operating shared autonomous service	Not deployed	<i>"Whether I book a VW or Daimler or BMW via our app will be not be a relevant question for most people. [...] You gotta start from an urban planning view, with the problem of a city - and not from a vehicle perspective."</i> - Participant 9
<b>Epsilon</b>	Personal, safe and flexible mobility that gradually replaces traditional business	Not deployed	<i>"The personal experience is where we can actually be better than the car industry. [...] We want to build something new. [...] Even our brand is not connected."</i> - Participant 11

The integration of OEMs' strategic positionings in the sharing economy with the concrete application in brand deployment yields the main insight that OEMs deploy their brand in alignment with their strategic positioning. For instance, *Alpha* follows a sustainability strategy which leads to a business model in which its brand as a technological leader in EVs is regarded as a required resource. Both *Gamma* and *Delta* follow a premium mobility strategy that results in a business model built around well reputed products and services. *Alpha*, *Gamma* and *Delta* thus strongly build their new business model on their existing brand as it is highly compatible with the overall strategic position. On the other hand, *Beta* does not see any relevance in vehicle brands within its new service and generally aims at reducing car ownership while *Epsilon* even



directly competes with the traditional business model for which using the OEM's brand is not a required resource.

### **Vehicle Deployment**

In section 5.1 it was revealed that all studied OEMs deploy vehicles as physical resources. Each shared mobility business model has certain requirements regarding used vehicles that stem from consumer preferences, regulatory sides or the overall fit with the service concept. As participant 4 puts it for *Gamma's* premium free-floating model: *"You need a lot of customers because you need a lot of cars from day 1. I cannot start with 10 cars and see how it goes, we had several hundreds on the first day. This is extremely costly."* Thus, the service is relying on small- to mid-size premium vehicles from *Gamma's* own portfolio that are either electric or have lower fuel consumption. With this, consumers are more flexible regarding finding parking spaces in cities while government authorities are also more tolerant towards these kinds of vehicles as they are more environmentally-friendly than larger counterparts. Finally, the large number of cars required for providing a dense vehicle network often comes with a low utilization rate through which costs for parking spaces or missing revenue potentials accumulate. In this setting, deploying large vehicles is not a viable solution.

Besides *Gamma*, we found peculiarities regarding vehicle deployment in each case. *Alpha* makes use of fully-electric cars in its service that are regarded as a perfect fit for sharing requirements in urban spaces as they come with a small size and a relatively good electric performance as well as low cost. *Beta's* ride-hailing service brings users together on the backseat of the car which is why a purpose-vehicle was developed that is big in size and gives each user enough space in the vehicle. As the vehicle has a permanent driver, parking fees do not apply and the overall utilization rate is much higher which makes the usage of large vehicles more viable. *Delta* deploys its vehicles similarly to *Gamma* with both fuel-based and electric vehicles that revolve around premium experience. However, also larger vehicles are deployed by *Delta* since the car rental setup requires less vehicles and parking fees do not apply. Lastly, *Epsilon's* focus is on providing a unique customer experience with vehicles for different purposes, for which it even considers to deploy vehicles from other OEMs.

Integrating our theoretical framework into these findings yields the insight that vehicle deployment is rooted in the overall strategic position the OEM takes in the sharing economy. Each new business model is a reflection of an OEM's sharing economy strategy and requires a specific set of resources, with differing requirements for the vehicle regarding design, features, size or environmental impact. For instance, *Alpha's* EV strategy is directly manifested in

providing a highly dense network of low-cost electric cars. *Beta* took a great step in committing its research and development to develop an electric purpose-vehicle that consumers cannot purchase privately but that is used in the sharing economy and directly reflects its strategic goal of reducing private car ownership. Also, *Epsilon*'s strategic positioning as a direct competitor to its parent is reflected in its vehicle deployment as it is not focusing on merely using *Epsilon*'s cars but rather get people into an experience-driven service with any vehicle that is most suitable for this purpose. Table 6 gives an overview of the specific vehicle deployments and strategic positionings per OEM.

*Table 6: Vehicle Deployments and Strategic Positioning*

OEM	Strategic Positioning in SE	Vehicle Deployment	Participant Insights
<b>Alpha</b>	Sustainable mobility for everyone	Small-size cars from own portfolio that are fully-electric	<i>"We use our compact cars with a good electric range. And it's a good price. We want to provide sustainable mobility for all so we are striving to make electric cars of the best quality but also affordable for the most."</i> - Participant 1
<b>Beta</b>	Reduce car ownership and be first commercially operating shared autonomous service	Large-size purpose-vehicles based on own portfolio that are fully-electric	<i>"Today, many vehicles that you see in other shared services are actually designed for private ownership. The future trend will be to develop shared purpose-vehicles just for mobility services like ours and we are already part of this."</i> - Participant 9
<b>Gamma</b>	Premium individual mobility	Small and mid-size cars from own portfolio that are fuel-based or electric	<i>"We have the strategy of being number 1 supplier of premium individual mobility. [...] If you know that we have good products, you wouldn't believe we would put a poor service on the market."</i> - Participant 4
<b>Delta</b>	Premium individual mobility	Mid- and large-size cars from own portfolio that are fuel-based or electric	<i>"Our core competence is the development of premium vehicles. Now we use this to build up new services."</i> - Participant 2
<b>Epsilon</b>	Personal, safe and flexible mobility that gradually replaces traditional business	Small- to large-size cars from own portfolio that are fuel-based or electric	<i>"We said ok, we might have something other than Epsilon cars. I wouldn't say that is totally out, so you might see our service brand on other vehicles."</i> - Participant 11

The concrete example of vehicle deployment adds to the previous findings from brand deployment as it points out how differences regarding resource deployment among OEMs are based on their overall strategic positioning.

### **Concluding remarks**

The analysis of individual resource deployment shows that

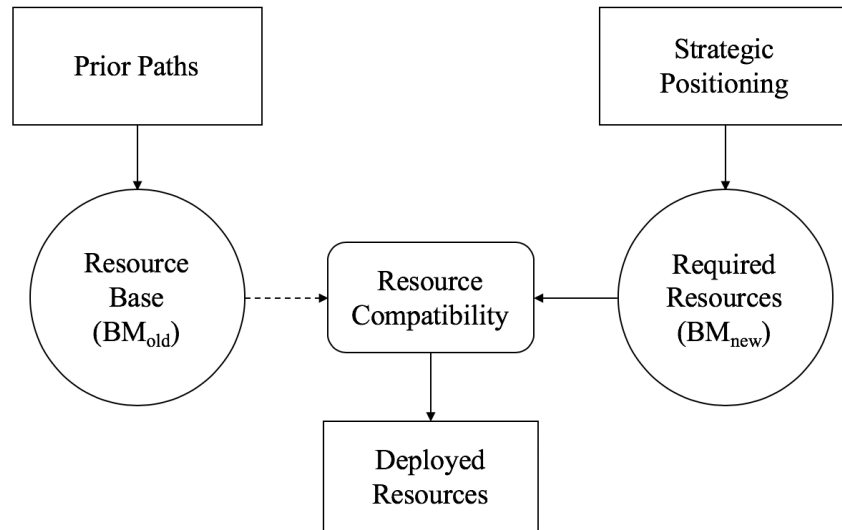
1. Deployed resources are determined by the degree of resource compatibility between traditional and shared mobility model.
2. Resource compatibility is defined as the overlap between the existing resource base in the traditional business model and required resources in the shared mobility business model.
3. Since the existing resource base in the traditional business model is relatively fixed, the degree of resource compatibility is mainly determined by required resources in the shared mobility business model.
4. The resource base in the traditional business model is shaped by the firm's prior paths and decisions.
5. Required resources in the shared mobility business model are determined by the strategic position an OEM takes in the sharing economy.

## 6. Discussion

To answer the research question of this thesis we applied our theoretical framework that integrates theoretical standpoints from the RBV, dynamic capabilities and business model research, with an analytical focus on resource deployment within an OEM's business model portfolio. Even though OEMs in the sharing economy were regarded, we expect that the framework can also be used to analyze resource deployment between business models in other contexts and hence is not limited to a specific industry, a specific type of company and specific new market environment.

The analysis has shown that OEMs deploy various resources from their traditional business models in their shared mobility business models whereas resource compatibility defines which concrete resources are deployed (Casadesus-Masanell & Tarziján, 2012). The concept of resource compatibility between business models in a business model portfolio was theoretically built up by integrating research streams from the RBV with business model theory and practically investigated through applying the framework of dynamic capabilities in the context of our empirical findings. Following arguments from the RBV, we conceptualized an OEM's existing business model as running on the OEM's individual resource base through which the resources that can potentially be deployed are limited (Teece et al., 1997). Following business model theory, we conceptualized an OEM's new shared mobility business model and the therein required resources as a result of a firm's strategic positioning in the sharing economy (Casadesus-Masanell & Ricart, 2010; Mintzberg, 1987). The resource deployment processes of seizing as part of the dynamic capability framework were then used to analyze actual resource deployments (Bowman & Ambrosini, 2003).

The construct of resource compatibility added to the understanding that firms on the one hand have different resource deployment options due to heterogeneous resource bases and that on the other hand firms deploy different resources in practice due to varying resource requirements in the new business models. Since the resource base in an OEM's traditional business model is relatively fixed, resource compatibility between business models in a portfolio is greatly determined by the resources required in the shared mobility business model which depends on an OEM's strategic positioning. These findings are shown in figure 10.



*Figure 10: Overview of Resource Deployment Logic*

While resource compatibility was found to explain which resources are deployed, our analysis has shown that existing resources are deployed through different processes of leveraging, reconfiguring, integrating and learning. We argue that these deployment processes entail varying degrees of ease of deployment, that is to what extent an existing resource can directly be used in the new business model without further adaptation. While leveraging processes might be more suitable to directly deploy a resource in a new domain of the firm, we expect learning or reconfiguration processes to require more coordination and slack as well as a more contextual deployment in the new environment. For instance, workforces and know how were found to be reconfigured or integrated by OEMs into their shared mobility business models and needed some alteration to serve the new market (Helfat & Peteraf, 2003) whereas the reputational resource of “*brand*” was found to be directly leveraged into the new business. It would thus be interesting to dive deeper into the relationship between the type of resources, their respective deployment processes and the resulting ease of deployment. Also, we found that resources of all categories are deployed while individual resources and shared mobility business models differ among OEMs. Thus, we expect an analysis into how the deployment of a resource depends on the choice of a specific business model to be insightful for strategic considerations of business modelling.

Adding to strategic issues, our gathered data have shown that resources are actually deployed bidirectionally between business models, while we only focused on unidirectional deployments from the traditional into the new business. For instance, the new shared mobility unit of OEM Gamma developed a keyless opening system that now is also used in their traditional business.

The implications of bidirectional synergetic relationships would be an interesting field for further study as a firm might thereby use diversification into new business models as a strategic tool for competitive advantage not only in its new business but also in its traditional one.

Finally, our analysis has shown that OEMs' strategic positionings are impacting resource compatibility by determining the set of required resources in shared mobility businesses, thus having a strong impact on the deployment of resources. However, a further investigation into what constitutes an OEM's strategic positioning seems warranted. On the one hand, an OEM could intentionally position itself in the sharing economy in such a way that it benefits from strengths and resources of the traditional business model. On the other hand, an OEM could purely derive its strategic positioning in the sharing economy from assessing the new market environment without considering the traditional way of doing business and as a second step identify deployable resources.

## 7. Conclusion

The purpose of this thesis was to explore how car manufacturers deploy their resource base to run their shared mobility business models for which a multiple case study with five OEMs was conducted. While shared mobility business models are frequently stated to follow a fundamentally different business model logic than the traditional business model, we found that a wide range of resources from the traditional business model is still used by OEMs in their shared mobility services. Our analysis further shows that existing resources are deployed through the processes of reconfiguration, learning, integration and leveraging whereas the latter is the predominant deployment process. This shows that most of the deployed resources are directly replicated while others are contextually adapted to the shared mobility business.

Even though the overall categories of deployed resources and their deployment processes were found to be highly similar across companies, there are major differences in the individual resources companies deploy. We identified resource compatibility between a car manufacturer's traditional and shared mobility business model to determine which resources are deployed. The degree of compatibility is thereby defined as the overlap of the resource base in the traditional business model and the required set of resources in the shared mobility business model. Whereas the resource base in the traditional business model is shaped by a car manufacturer's prior paths and decisions, the required set of resources in the new business model depends on the OEM's strategic positioning in the sharing economy.

Our study shows that car manufacturers possess resources that are still relevant in shared mobility services beyond the pure utilization of vehicles and that synergies can be realized between traditional and new shared mobility business model. Therefore, manufacturers must thoroughly evaluate their strategic ambitions in this new market environment by considering how their existing strengths can be used to drive the future of mobility and build competitive advantages, especially since dominant players from the tech- and startup world are now also becoming more asset-heavy:

*“The world's largest taxi firm, Uber, is buying cars. [...] And the world's largest accommodation provider, Airbnb, increasingly owns real estate. Things change.” - Goodwin (2018)*

## **7.1 Theoretical Contribution**

The results of this thesis add to previous research on dynamic capabilities and business model research in five ways. First, we integrate literature on dynamic capabilities with business model diversification literature. By combining theoretical standpoints from these research streams, we answer the call for future research that focuses on the intersection of these fields (Sachsenhofer, 2016; Sohl & Vroom, 2014).

Second, we add to the limited number of studies on incumbents which develop new business models in changing environments. We particularly investigated the resource deployments of incumbents in relation to their strategic positioning (Kim & Min, 2015).

Third, we created an application frame for a specific set of dynamic capabilities by analyzing the underlying deployment processes of resources to run new business models. Especially in the domain of the sharing economy this is a new way of incorporating dynamic capability literature (Guyader & Piscicelli, 2019; Helfat & Peteraf, 2009).

Fourth, we add to research within the sharing economy by adopting a meso-level perspective on resource deployment between business models as previous research was predominantly adopting micro- and macro-level perspectives (Cheng, 2016).

Fifth, we answer the call for more qualitative case studies in research on dynamic capabilities by analyzing them as resource deployments from a traditional to a new business model in a multiple case study (Teece, 2012).

## **7.2 Managerial Implications**

The results of this thesis have three major implications for managers. First, although OEMs often organize their new mobility units in a separated subsidiary, the OEM should actively try to manage its business model portfolio to realize synergies between its traditional business model and its shared mobility service. Even though a shared mobility service seems to follow a fundamentally different business model logic, it is worth analyzing whether decades of manufacturing and selling cars and building up a rich resource base can yield a competitive advantage over other companies and specifically over new market entrants such as tech-companies and startups. In particular, managers should focus on identifying resources of their traditional business that are also relevant in their shared mobility service.



Second, once resources of the traditional business that are relevant in new mobility services are identified, an OEM should identify which processes are needed to deploy them. By doing so, an OEM can distinguish between resources that directly can be replicated and resources that need further adaptations to be deployed. Based on this differentiation, the deployment of resources can be prioritized.

Third, managers should be aware of the fact that the degree of resource compatibility between traditional and shared mobility business model is largely determined by the strategic position an OEM takes in the sharing economy. An OEM should not only think about how it wants to strategically position itself in relation to competitors in the sharing economy but also how it wants the shared mobility service to relate to the traditional business.

### **7.3 Limitations**

This thesis has three major limitations. First, as the empirical findings of studied OEMs are mainly based on one or two interviews with respective company representatives, the individual interviewees' perspectives on resource deployment are strongly reflected in the findings. Even though case information was supplemented with secondary information, individual perspectives, knowledge and responsibilities of interviewees strongly impacted the data that were gathered.

Second, the construct of compatibility that emerged from our analysis holds the assumption that all resources that are compatible between business models are deployed. However, it is possible that resources from the traditional business model are compatible with the required resources of the new one but are not deployed. For instance, this could happen if externally sourcing the required resource adds to a more cost-effective, timely or customer-friendly offering than deploying it from the traditional business model.

Third, the notion of resource-based competitive advantages is underrepresented in this thesis. While we develop our theoretical framework from literature on competitive strategy, our analysis does not thoroughly take into account other players such as other OEMs developing shared mobility businesses or startups. In particular, we did not analyze the quality of deployed resources and how deploying existing resources adds to competitiveness or firm performance.

## 7.4 Future Research

Based on existing literature and the findings of our study, we propose four future research areas. First, whereas our study focused on unidirectional resource deployment, future research could emphasize multidirectional synergetic relationships between a firm's business models to find out how a firm can gain competitive advantages by deploying newly developed resources of the shared mobility service in other business models such as its traditional one.

Second, we identified an OEM's strategic positioning to influence resource compatibility and thereby resource deployment. We did not investigate how differences in strategic positionings arise. An interesting area for further research would thus be to investigate what constitutes strategic positioning and whether OEMs base their strategic considerations for the sharing economy on their existing resources or whether they first define an overall strategy for which suitable resources are then deployed.

Third, a longitudinal study of resource deployments in OEMs' shared mobility business models seems warranted. In particular, analyzing how synergies between a traditional and a new business model change over time could yield insights into the long-term relevance of the existing resource base from a strategic point of view.

Fourth, we propose an application of our theoretical framework within other industries that are affected by the sharing economy or other changing market environments to identify cross-industry similarities or differences in resource deployment.

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## 9. Appendices

### Appendix 1: Sample Interview Guide – Mobility Experts

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#### Sample Interview Guide – Mobility Experts

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##### **Personal introduction of interviewers**

##### **Introduction of thesis**

##### **Personal introduction of interviewee**

##### **Main questions**

- What is the motivation behind companies to develop new mobility solutions in the sharing economy?
- How is the sharing economy perceived by established car manufacturers?
- Could you please share the different strategies car manufactures have implemented in the sharing economy?
- How does the strategic positioning in the traditional business play a role in the sharing economy?
- What are the business model types car manufacturers developed for the sharing economy and how do they differ from each other?
- Which are the core resources and competences car manufacturers need to develop and run a shared mobility service?
  - o Which of these resources and competences are new to car manufacturers?
  - o Which of these resources and competences can car manufacturers directly adopt from their traditional business?
- What are the core challenges for car manufacturers in developing and running a shared mobility service?
- Where do car manufacturers have advantages over tech-companies and startups in developing and running a shared mobility service?
- Where do tech-companies and startups have advantages over car manufacturers in developing and running a shared mobility service?

##### **Note**

Interview questions as well as order of questions were tailored to interviewee and consequently varied among interviews.

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## **Appendix 2: Sample Interview Guide – Representatives of OEM**

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### **Sample Interview Guide – Representatives of OEMs**

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#### **Personal introduction of interviewers**

#### **Introduction of thesis**

#### **Personal introduction of interviewee**

#### **Main questions**

- What is the motivation behind company X to develop new mobility solutions in the sharing economy?
- How is the sharing economy perceived within company X?
- Could you please share company X's general vision and strategy regarding shared mobility services?
- What is the business model of company X's shared mobility service?
- Which customer groups does company X address with its shared mobility service?
- How is company X's shared mobility service set up organizationally?
- Which resources and competences are needed to develop and run company X's shared mobility service?
  - o Which of these resources and competences are new to company X?
  - o Which of these resources and competences could you directly adopt from company X's traditional business?
- What are the core challenges for company X in developing and running its shared mobility service?
- Where does company X have advantages over tech-companies and startups in developing and running a shared mobility service?
- Where do tech-companies and startups have advantages over company X in developing and running a shared mobility service?

#### **Note**

Interview questions as well as order of questions were tailored to specific company and interviewee and consequently varied among interviews.

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