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Danish-German Research Paper No. 5:

Business Models and the Impact of Different Market Contexts: Towards an analytical framework for researchers and practitioners

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Abstract

The focus of this research lies on the question of how the business model concept can be specified, systematically operationalized and adapted to different market contexts. In the existing literature there are many definitions of business models which include different components. We want to give a structured overview of comprehensive business model concepts and test if the definitions also reflect special market contexts such as platform markets. Platform markets are characterized by different market sides which are connected by network effects. Combining both areas, the aim is to come up with a comprehensive conceptualization of business models for researchers and practitioners acknowledging market characteristics. We test the resulting concept which we call “business model wheel” for the e-mobility market which we have chosen as an example for platform markets with strong network effects and identified differences between the business models of the electric vehicle (EV) manufacturers Tesla Motors and Renault.

Abstrakt

Der Fokus dieser Untersuchung liegt auf der Frage, wie das Konzept des Geschäftsmodells spezifiziert, systematisch operationalisiert und an verschiedene Marktkontexte angepasst werden kann. In der existierenden wissenschaftlichen Literatur findet sich eine große Anzahl verschiedener Definitionen von Geschäftsmodellen, welche unterschiedliche Komponenten beinhalten. Wir wollen einen strukturierten Überblick über konkrete Geschäftsmodellkonzepte geben und überprüfen, ob diese auch verschiedene Marktkontexte berücksichtigen. Plattformmärkte sind charakterisiert durch verschiedene Marktseiten, welche durch Netzwerkeffekte miteinander in Verbindung stehen. Beide Themenbereiche verbindend, ist es unser übergeordnetes Ziel, eine praktikable Konzeptualisierung von Geschäftsmodellen für Praktiker und Forschende zu entwickeln, welche verschiedene Marktkontexte mit berücksichtigt. Wir testen das entwickelte „Business Model Wheel“ für den Markt für Elektrofahrzeuge, welchen wir als Beispiel für einen Plattformmarkt mit starken Netzwerkeffekten gewählt haben. Dabei identifizierten wir u.a. verschiedene Arten von Geschäftsmodellen der Hersteller Tesla Motors und Renault.

Keywords: Business models, market characteristics, platform markets, competitive advantage, case study, e-mobility

Business Models and the Impact of Different Market Contexts: Towards an analytical framework for researchers and practitioners

1 Introduction: Competitive advantage and business models

Businesses strive to create value for their customers to generate returns for the firm owners (Hambrick and Fredrickson, 2001; Porter, 1996). Some firms are better with regard to reaching this aim than others – why is that the case? Strategic management as a discipline deals with understanding the sources of such competitive advantage. Recently, business models have been in the focus of many strategy scholars' investigations of competitive advantage (Wirtz, Pistoia, Ullrich and Göttel, 2016). Business models have been conceptualized and analyzed in different contexts and from different perspectives (e.g., Amit and Zott, 2012 and 2015; Casadesus-Masanell and Ricart, 2010; Chesborough and Rosenbloom, 2002; Osterwalder and Pigneur, 2009; Teece, 2010).

Strategic management in its “early days” very much relied on a market-based view and understood competitive advantage as a consequence of skillful positioning strategies (Porter, 1980, 1981, 1985). More recently, the sources of competitive advantage have been identified rather inside the firm in the form of valuable firm resources (Barney, 1991; Grant, 1991; Peteraf, 1993) or dynamic capabilities (Teece, Pisano and Shuen, 1997). While both views in a way complement each other since the market environment as well as firm internal assets obviously have an effect on the potential success of a company, they are not sufficient to understand why some players create more value than others.

The relational view adds the idea of inter-organizational resources and their value-creation potential (Dyer and Singh, 1998; Lavie, 2006) and thereby takes into account that competitive advantage may also be a result of cooperative activities.

Since “[s]trategic management, in both theory and practice, tries to understand how firms may improve their performance in competitive interactions with other firms” (Sanchez and Heene, 1997, p. 303), the question is how the concept of business models can contribute to the understanding of

value creation and appropriation of firms. This paper wants to elaborate this further by taking the mentioned perspectives on strategy as inspiration for a holistic business model conceptualization.

Due to the fact that in many markets the classic value chain “pipeline” model transfers to a platform market (van Alstyne, Parker and Choudary, 2016) we want to take these market effects into account. Business models as those of Airbnb or Uber demonstrate most impressive that innovative entrepreneurial concepts can overcome market entry barriers and isolation mechanisms of large incumbents by building on “external” resources: ”Technology enables Uber and other companies such as Airbnb to lower costs by leveraging underutilized assets owned by others”(Smith, 2016, p. 388). In such markets “ecosystems of users are the new source of competitive advantage and market dominance” (Parker, van Alstyne and Choudary, 2016, pos. 651).

This research therefore focuses on an in-depth investigation of business models also acknowledging market characteristics. Our main research question is how business models acknowledging market characteristics can be conceptualized and usefully operationalized for researchers and practitioners. In that context - building on recent studies (Cennamo and Santalo, 2013; McIntyre and Chintakananda, 2014) – we also want to contribute to a more holistic and multi-faceted understanding of the sources of competitive advantages in platform industries. In particular, we try to answer the following research questions to reach the overarching aim:

What are the core characteristics of business models respectively platform markets and how can these complex concepts be systematized in a useful fashion and be brought together?

Building on this identification of relevant elements we focus on one market constellation to come to more in-depth understanding of these and thereby to an illustration how useful our conceptualization can be to understand value creation possibilities in a certain market context. We therefore investigate:

Which characteristics of business models can be identified in early phase platform industries, specifically the e-mobility market?

The remainder of this paper is organized as follows: In the second section we review the relevant business model and platform market literature. In the third section, we bring both together and conceptualize a framework for business models also considering market characteristics. In the fourth section our framework is applied to electric vehicle companies active in the platform market of e-mobility to test the practicability of the before developed business model framework. We conclude and finalize this paper with the lessons learnt, its limitations and implications for future research.

2 Literature Review: Business models and platform markets

Defining and identifying relevant characteristics of business models and platform markets is the aim of the following sections. The understanding of these elements is the basis for our following conceptualization of a holistic tool to analyze business models in different market contexts.

2.1 Business model conceptualization in the literature

Many different business model definitions and conceptualizations are used in the literature (Wirtz et al., 2016). Further, many business model definitions remain rather vague and – even though getting more comprehensive – fail at being operational enough for being used for real business model analysis and comparisons. Our first aim here is to give a short overview on the most comprehensive definitions. We therefore analyzed different research papers (e.g., Zott, Amit and Massa, 2011; Fiel, 2013; Beverungen, Fabry, Ganz, Matzner and Satzger, 2015) that present overviews with many abstract and generic definitions. We pulled out those definitions which we assessed as most comprehensive. The focus lies on the extent of their operationalization. We chose those which we regarded as operationalized to a helpful degree for being able to analyze them and their potential to be part of a useful analytical framework of business models for researchers and practitioners. The following Table 1 gives an overview on the definitions that meet these expectations.

Table 1: Selected, comprehensive business model definitions.

Business Model Definitions	Author(s)
<p>“Definition of a business model: An architecture for the product, service and information flows, including a description of the various business actors and their roles; and a description of the potential benefits for the various business actors; and a description of the sources of revenues.”</p>	<p>Timmers (1998, p. 4)</p>
<p>“A business model is a unique blend of three streams that are critical to the business. These include the value stream for the business partners and the buyers, the revenue stream, and the logistical stream. The value stream identifies the value proposition for the buyers, sellers, and the market makers and portals in an internet context. The revenue stream is a plan for assuring revenue generation for the business. The logistical stream addresses various issues related to the design of the supply chain for the business.”</p>	<p>Mahadevan (2000, p. 59)</p>
<p>“The functions of a business model are to: articulate the value propositions, i.e. the value created for users by the offering based on the technology; identify a market segment, i.e. the users to whom the technology is useful and for what purpose, and specify the revenue generation and mechanism(s) for the firm; define the structure of the value chain within the firm required to create and distribute the offering, and determine the complementary assets needed to support the firm’s position in this chain; estimate the cost structure and profit potential of producing the offering, given the value proposition and value chain structure chosen; describe the position of the firm within the value network linking suppliers and customers, including identification of potential complementors and competitors; formulate the competitive strategy by which the innovating firm will gain and hold advantage over rivals.”</p>	<p>Chesborough and Rosenbloom (2002, p. 533)</p>
<p>“A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing a company’s logic of earning money. It is a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams.”</p>	<p>Osterwalder (2004, p. 15)</p>
<p>“A business model articulates the logic, the data, and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value. In short, it’s about the benefit the enterprise will deliver to customers, how it will organize to do so, and how it will capture a portion of the value that it delivers. [...] a business model is more generic than a business strategy. [...]”</p>	<p>Teece (2010, p. 173)</p>
<p>“A business model is a simplified and aggregated presentation of the relevant activities of a company. It describes how marketable information, products and/or services are generated by means of a company’s value-added component. In addition to the architecture of value creation, strategic as well as customer and market components are taken into consideration, in order to achieve the superordinate goal of generating, or rather, securing the competitive advantage. To fulfill this latter purpose, a current business model should always be critically regarded from a dynamic perspective, thus within the consciousness that there may be the need for business model evolution or business model innovation, due to internal or external changes over time.”</p>	<p>Wirtz et al. (2016, p. 41)</p>

Source: own table.

Comparing these definitions, we come to an excerpt of business model elements that most definitions we identified did contain: customer value proposition (product), key resources, revenue model and organizational aspects. These, however, do not yet reflect market or industry structures (see Porter, 2001, p. 13). The most recent definition we included by Wirtz et al. (2016) links the concept into market characteristics, though. Further, the business model literature is – based on the cited comprehensive definitions and all the existing generic and fuzzy definitions – one step further regarding operationalization and conceptualization: Some authors developed frameworks for business model analysis from which we again identified the most comprehensive ones and summarize them in the following Table 2. Our selection criteria have been the operationalization of the elements as well as the applicability.

Table 2: Choice of existing business model analysis frameworks

Author(s)	Elements	
Mahadevan (2000)	<ol style="list-style-type: none"> 1. Value streams 2. Revenue streams 3. Logistical streams 	<ul style="list-style-type: none"> ✓ Operationalized ✓ Applied for e-commerce types
Morris, Schindehutte and Allen (2005)	<ol style="list-style-type: none"> 1. Factors related to the offering 2. Market factors 3. Internal capability factors 4. Competitive strategy factors 5. Economic factors 6. Personal/ investor factors 	<ul style="list-style-type: none"> ✓ Operationalized ✓ Applied
Johnson, Christensen and Kagermann (2008)	<ol style="list-style-type: none"> 1. Customer value proposition 2. Profit formula 3. Key resources 4. Key processes 	<ul style="list-style-type: none"> ✓ Operationalized ✓ Applied
Osterwalder and Pigneur (2009)	<ol style="list-style-type: none"> 1. Key partners 2. Key activities 3. Key resources 4. Value Proposition 5. Customer relationship 6. Channels 7. Customer segments 8. Cost structure 9. Revenue streams 	<ul style="list-style-type: none"> ✓ Operationalized ✓ Applied

Source: own table.

Even though most of these frameworks are operationalized and applied to a certain extent they lack explicit and practical operationalization that enable a profound analysis of companies' underlying business models while at the same time acknowledging market characteristics.

Porter (2001) asks for not losing the bigger picture: “The definition of a business model is murky at best. Most often, it seems to refer to a loose conception of how a company does business and generates revenue. Yet simply having a business model is an exceedingly low bar to set for building a company. Generating revenue is a far cry from creating economic value, and no business model can be evaluated independently of industry structure. The business model approach to management becomes an invitation for faulty thinking and self-delusion” (Porter, 2001, p. 13).

Amit and Zott (2015, p. 346) highlight that “[m]uch of the literature still underemphasizes its [the business models'] boundary-spanning aspects and centers on its firm-level characteristics.” Next to the deficit of the business model literature regarding the inclusion of market characteristics it thereby becomes obvious that it is not sufficient to understand a business model as referring to firm internal structures exclusively. Rather, a business model reflects the relationships to different partners and the embeddedness of a firm into a certain market context.

These criticisms are the points of reference for our work. Market characteristics and boundary-spanning aspects are relevant facets of our framework plus the relevant elements identified from the literature (see Table 2 again). Due to the growing relevance of platform markets (Parker et al., 2016) we take these as exemplary market contexts for our business model considerations next.

2.2 Platform market conceptualization in the literature

Platform industries are characterized by the predominance of network effects, in particular indirect network effects, i.e., the willingness-to-pay of one market side of the platform increases with the size of the other market side of the platform. Typical examples for such two- or more-sided platform

industries include the credit card, video game and media industry, electronic auctions and electric mobility. The following Table 3 gives an overview on selected, comprehensive definitions.

Table 3: Selected, comprehensive platform market definitions.

Platform Market Definitions	Author(s)
“Component or subsystem of an evolving technological system, when it is strongly functionally interdependent with most of the other components of this system, and when end-user demand is for the overall system, so that there is no demand for components when they are isolated from the overall system.”	Gawer and Henderson (2007, p. 4)
“A platform-mediated network is comprised of users whose transactions are subject to direct and/or indirect network effects, along with one or more intermediaries that facilitate users’ transactions [...]. The platform encompasses the set of components and rules employed in common in most user transactions [...]. Components include hardware, software, and service modules, along with an architecture that specifies how they fit together [...]. Rules are used to coordinate network participants’ activities [...].”	Eisenmann, Parker and Van Alstyne (2008, p. 3)
“We argue that the fundamental architecture behind all platforms is essentially the same: the system is portioned into a set of ‘core’ components with low variety and a complementary set of ‘peripheral’ components with high variety (Tushman/Murmann, 1998). The low-variety components constitute the platform. They are the long-lived elements of the system and thus implicitly or explicitly establish the system’s interfaces, the rules governing interactions among the different parts.”	Baldwin and Woodard (2009, p. 3)
“A platform provides the infrastructure and rules for a market place that brings together producers and consumers. The players in the ecosystem fill four main roles but may shift rapidly from one role to another.”	Van Alstyne, Parker and Choudary (2016, p. 6)

Source: own table.

It becomes clear that components, interactions and network effects are the core essentials of platform markets and that different market sides are interconnected. Such special market characteristics have an effect on value creation and value appropriation and thus on competitive advantage generation. Therefore, they should be taken into account when analyzing business models. However, so far, only a few business model definitions – such as the one by Chesborough and Rosenbloom (2002) – take these characteristics into account.

Platform industries are characterised by the interaction of two or more market sides. These interactions are enabled by platforms which consist of a system of hard- and/or software components, protocols, rules, etc. (Boudreau, 2008; Baldwin and Clark, 2000; Baldwin and Woodard 2009). In such markets the average benefit per user grows with the total number of users in networks.

Such an increase of the benefit per user is observable in physical networks such as the telephone network. Here direct network effects on one market side are relevant (Economides and Himmelberg, 1995). Indirect network effects are however prevalent especially in two-sided markets: “[...] the benefit enjoyed by a member of one group depends upon how well the platform does in attracting custom from the other group. [...]” (Armstrong, 2006, p. 668). The existence of indirect network effects means that taking into account compatibility issues regarding the generation of competitive advantage is central when such so-called cross-side effects occur.

The importance of network effects impacts the competitive forces and strategic features of platform industries. Platforms which can attract larger numbers of participants enjoy an important competitive advantage over smaller networks. As a result, network mobilisation is one of the most crucial strategic features of platform industries. There are several instruments for network mobilisation, such as subsidising certain network members to push a critical mass of users, attracting additional platform owners, and opening the platform for more providers by a reduction of platform entry barriers (such as joint software standards for video games). Of course, these instruments result in strategic trade-offs, mainly value creation versus value appropriation.

To reach a critical mass of customers the actors in a certain market have different options. Credible signals are suggested to play a crucial role to attract enough customers (e.g., Katz and Shapiro, 1994). Uncommon pricing strategies (e.g., charging one market side and subsidising the other) as well as early product announcement may also help to reach critical mass, where customer expectations play a crucial role (Katz and Shapiro, 1985; Farrell and Saloner, 1986; Farrell and Gallini, 1988). Eisenmann, Parker and Van Alstyne (2008) reviewed factors to open or respectively close a platform at multiple levels. They further describe horizontal and vertical strategies. Horizontal strategies include “licensing, joint standard setting, and technical interoperability with rival platforms” whereas vertical strategies to manage openness include “backward compatibility, platform and category exclusivity, and absorption of complements” (Eisenmann et al., 2008, p. 22).

Over time both proprietary (closed) and open platforms however may develop towards a hybrid model with central control over technology and shared responsibility for user matters (Eisenmann et al., 2008). Another distinction is made between single homing where an agent chooses to use only one platform and multi-homing where (s)he uses several platforms in parallel (Armstrong, 2006).

The meaning of platform competition is accelerating the analysis of platform markets as well. It has often been hypothesised that platform markets have the characteristics of winner-take-all or winner-take-most markets (e.g., Katz and Shapiro, 1994; Besen and Farrell, 1994; Caillaud and Julien, 2003). Recently, however, this hypothesis has been questioned due to the fact that in certain platform industries a coexistence of different platform systems can be observed (Cennamo and Santalo, 2013, p. 1332). Cennamo and Santalo highlight that there are more strategic choices in platform markets than just trying to reach as many customers as possible in a short time period. Rather, they suggest that actors in platform markets have more strategic options with regard to value creation especially by differentiating against competitors (Cennamo and Santalo, 2013, p. 1333).

This is a relevant point of reference for this research. We do not only take into account the specificities of platform markets and their strategic implications, but further investigate the strategic competitive advantage generation after the network effects have been overcome: In platform markets, it is a necessary condition for competitive advantage generation that a critical mass of users is reached. But is it also a sufficient condition to sustain competitive advantage? Our reasoning is that other aspects have to be taken into account to be able to outperform competing product-systems in the longer run. This is where the business model design links in and at the same time that is the starting point for the development of our conceptual framework.

3 Conceptualizing a Framework for Business Models in Platform Markets

This section builds on the previous elaboration of business models and platform markets and merges both research areas. We here develop a holistic and applicable framework founded on the so-far findings from the field. This framework is designed for researchers and practitioners to analyze and compare business models with regard to value creation and appropriation. A business model from a strategy perspective strives to achieve and sustain competitive advantage and “[c]oupling strategy analysis with business model analysis is necessary in order to protect whatever competitive advantage results from the design and implementation of new business models” (Teece, 2010, p. 180).

Our understanding of business models takes into account the highlighted relevant elements from the literature (see Section 2.1) – for us the structure of a business model is reflected in what has been named value creation architecture by others (Dietl, Royer and Stratmann, 2009 or Beckmann, Royer and Schiavone, 2016), i.e., “the structure and relationships of all the value-adding activities that are carried out by various actors and companies to bring a particular product or service to market” (Dietl, Royer and Stratmann, 2009, p. 26). Taking this perspective, we focus on single firms embedded into a network of other actors and thereby also take into account market specificities as well as the boundary-spanning nature of firm activities and the resulting competitiveness.

In the following section we want to conceptualize a framework to analyze business models while also taking into account market characteristics, specifically those of platform markets. Therefore next to our understanding of a business model we need to come to a useful conceptualization of platform markets. From our literature review (see Section 2.2) we can come to the conclusion that in sum, core characteristics of platform markets are network effects. Often next to direct network effects, indirect effects play a role, i.e., complements are necessary to create user benefits with a certain product or service. As stated above, basically, “[i]n the world of network effects, ecosystems of users are the new source of competitive advantage and market dominance” (Parker et al. 2016, pos. 651).

In a platform market no bilateral relationships between actors but platform provider(s) are necessary to coordinate interactions between two market sides and in a certain industry contexts one or more platform providers may compete with each other. We thus regard the following understanding as useful for our analysis: In a two-sided market one or several platform providers coordinate the transactions between the users on the one (market) side and providers of complements on the other (market) side.

As suggested above, competitive advantage can be conceptualized in different ways that we want to include in our framework. To come to a useful conceptualization we make use of existing tools from the strategy literature:

Michael Porter (1981, 1985) contributed to our understanding of competitive advantages by shaping what is often referred to as the market-based view: Firms positioned in attractive industries are suggested to be able to generate monopolistic rents. In this context, value chain analysis highlights internal firm characteristics (Porter, 1985, p. 33-61). Firms may realize competitive advantage when they succeed in offering certain activities with lower cost or higher perceived differentiation.

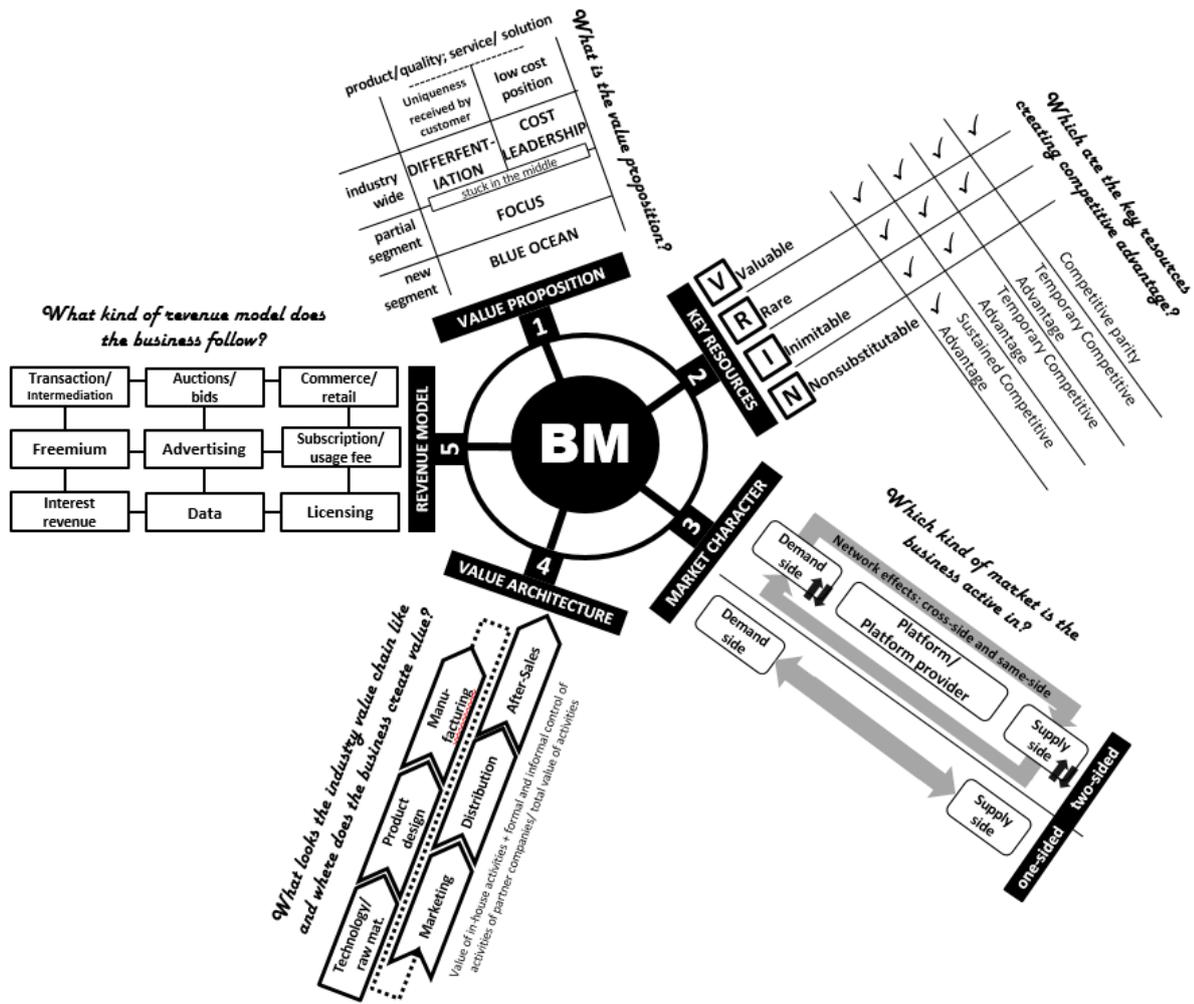
The resource-based view of the firm (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993) locates the sources of competitive advantage mainly within the firm, i.e., in valuable firm resources which cannot easily be imitated or transferred. Examples may be firm-specific assets such as knowledge (Kogut and Zander, 1992) which enable firms to realize Ricardian rents. The dynamic capabilities view (Teece et al., 1997) complemented these with Schumpeterian or entrepreneurial rents.

Finally, the relational view added the idea of relational rents (Dyer and Singh, 1998) to the strategy literature.

All these rent concepts can partly explain competitive advantage generation, so that they are relevant inspiration for coming to a better understanding of business model design. To come to insights into relevant facets of business models in platform markets, first of all, market characteristics are to be

identified. The following Figure 1 shows a structure we suggest to the community with the aim to fuel the discussion and make progress on a way to a useful business model tool acknowledging market characteristics as well as the boundary-spanning nature of business models plus the “standard repertoire” of strategic management.

Figure 1: Strategic business model wheel



Source: own figure based on Porter (1980); Kim and Mauborgne (2004); Barney (1991); Eisenmann, Parker and van Alstyne (2008); McKinsey (2000); Laniado (2016).

The strategic “business model wheel” (BMW) consists of five spokes: value proposition, key resources, market characteristics, value chain/ architecture and revenue model.

The value proposition analysis here builds on Michael Porter's generic strategies of differentiation, cost leadership and focus with add-ons such as services and solutions from Treacy and Wiersema (1995) and the Blue Ocean strategy of creating completely new markets by Kim and Mauborgne (2004), they are “[...] the unknown market, untainted by competition. In blue oceans, demand is created rather than fought over. There is ample opportunity for growth that is both profitable and rapid” (Kim and Mauborgne, 2004, p. 72). There are two ways described to create blue oceans: companies can give birth to a completely new industry or – as in most cases – it is created from within a red ocean while an existing company alters the boundaries of an existing industry (Kim and Mauborgne, 2004, p. 72).

For the analysis of the company's key resources which put the company in a position to create and possibly sustain competitive advantage we propose Barney's (1991) VRIN-framework to evaluate firm resources as valuable, rare, inimitable and non-substitutable. The analysis sees the origin of sustained competitive advantage in firm resource heterogeneity and immobility (Barney, 1991, p. 103) even though not all firm resources hold the potential for sustained competitive advantage. For having this potential in Barney's view a firm resource must have four attributes: 1. it must be valuable (exploit opportunities/ neutralize threats; 2. must be rare (regarding the firm's current and potential competition); 3. must be imperfectly imitable; and 4. cannot have a strategically equivalent valuable resource – it needs to be non-substitutable (Barney, 1991, pp. 105-112).

For the market characteristics we distinguish standard one-sided from the emerging view of two- or multi-sided markets/platform markets which e.g. are extensively discussed by the community and the pioneers Eisenmann, Parker and van Alstyne (e.g., 2008). We discussed these intensively above.

For the analysis of the value creation activities of the company we here use the value chain concept by McKinsey (2000) or for more detailed analysis the value creation architecture concept by Dietl, Royer and Stratmann (2009, p. 26) which “describes the structure and relationships of all the value-

adding activities that are carried out by various actors and companies to bring a particular product or service to market.” The value creation activities of firms can range on a continuum from highly disintegrated (market) to very much integrated (hierarchy) forms with various hybrid forms in-between. Thus, here the boundary-spanning nature of business models becomes obvious.

The operationalization of the revenue model is especially underdeveloped from a systematic and academic point of view – we here use the differentiation made by business consultant Laniado (2016) as he provides a practical list of different revenue models for most sectors and situations. He differentiates commerce and retail, subscriptions and usage fees, licensing, auctions and bids, advertising, data, transactions/ intermediation, freemium, and revenue model types common within the financial service industry. However, still there is need for more detailed operationalization and implications for the different models. The classical model for example is to sell physical goods e.g., via high-street stores – the traditional retail channels – which are challenged today by internet-based companies such as Amazon with its digital services and subscription-based products (e.g., using Amazon Prime Video instead of buying a Blu-ray in a classical store).

All five spokes together form the business model of a company so that when using this framework, we think a thorough picture of the underlying business model can be provided – and also be used to compare different business models. One relevant aspect lies in the fact that we are able with this perspective to take into account cooperative activities (e.g., with component suppliers in platform markets) as well as activities of single firms. Thereby business models of highly integrated players may be compared with those who are as a single firm operating as a part of a network of smaller players for example.

4 Case Study: Analyzing business models in the electric vehicle industry

To contrast the business model wheel with the reality in a first step we use a case study approach. A multiple case design may be useful (Yin, 2014, p. 18). Case studies are a useful approach to illustrate general facts or theoretical concepts. They are an “[...] empirical inquiry that investigates a contemporary phenomenon within its real-life context [...]” (Yin, 2014, p. 16). The case study as a research strategy “[...] copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion [...]” (Yin, 2014, p. 17).

The aim of the empirical part of this paper is the investigation of different business models in the e-mobility market on the basis of the before outlined framework. Data are collected by analyzing industry and business reports and firm documents.* The findings are used to illustrate how the business model can be filled with data to highlight the relevant elements of the business models of firms and thereby to come to a better understanding of their value creation and appropriation potential.

First the e-mobility market will be illustrated and reflected in front of the platform markets characteristics: We see the e-mobility market as a young platform market in its mobilization phase. We identified the electric vehicle as the core component or said differently the electric vehicle manufacturer as the platform provider. Market side 1 consists of the end-customers in terms of individuals or fleet buyers. On market side 2 we see the peripheral components respectively the complements (i.e., primarily charging infrastructure but also after-sales services for instance).

* *Official company reports of Tesla Motors and Renault such as the annual reports as well as articles from automotive and finance magazines and newspaper articles have been analyzed. For further information please do not hesitate to contact Oke Beckmann (e-mail: oke.beckmann@uni-flensburg.de). A digital and printed database with these documents has been established.*

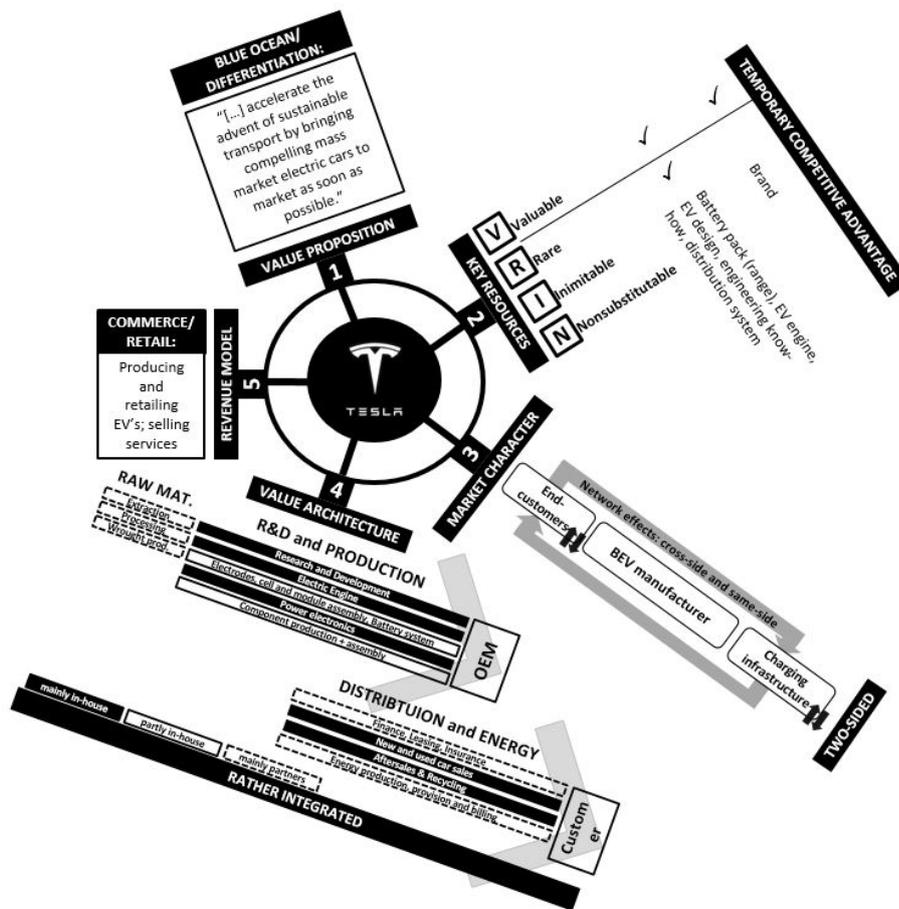
Additionally, we clearly see the existence of strong indirect network effects: The more compatible charging infrastructure exists, the more attractive the electric vehicle itself is for the customer and vice versa. The more electric vehicles are sold the more attractive it is for companies to invest in a dense network of (fast) charging infrastructure. We hence not only see strong indirect network effects but also a typical chicken-egg problem which needs to be solved by the stakeholders of the e-mobility sector (Dietl, Royer and Beckmann, 2013).

The e-mobility sector can be analysed as a platform market in line with our definition above (Rochet and Tirole, 2003; Armstrong, 2006): The e-mobility platform consists of rules and standards and contains two market sides, the demand side with private and business customers and the complements supplier sides. Platform providers offer e-vehicles following the rules and standards of the platform.

In the next step of the empirical work the business model wheel is used to analyze e-mobility business models. Therefore, we identified typical architectures of value creation in the industry and selected the business models around Tesla and Renault as focal players in the e-mobility market as our cases:

Tesla Motors, Inc. as a U.S. electric vehicle manufacturer and one of the leading companies in the electric vehicle industry as well as Renault SA as a traditional vehicle manufacturer with strong electric vehicle activities were chosen for the case study. The reason for this selection is that we want to contrast different players in the same industry context: While Tesla is a new player characterized by a high degree of integration of the value creation activities necessary to bring e-mobility to the roads; Renault is an incumbent in the automobile industry with a lower manufacturing and distribution depth. The following Figure 2 gives an overview of the analysis of the first company in our focus: Tesla Motors.

Figure 2: Business model analysis of Tesla Motors, Inc.



Source: own figure and analysis.

The value proposition of Tesla Motors – when seeing it in the context of other automotive competitors – has the characteristics of a differentiation or even blue ocean strategy as Tesla wants to bring pure electric vehicles to the mass market. The battery pack with its very high range, the engine and design, the engineering know-how and the own distribution system can be identified as key resources. The electric vehicle market can be characterized as a platform market as there are at least two market sides: the battery electric vehicle manufacturer as platform provider sells electric vehicles to end or fleet customers. These are strongly dependent on charging infrastructure. In the case of the Tesla vehicles, Tesla Motors itself contributes here and brings such infrastructure into the market. Obviously, third parties can also provide additional infrastructure.

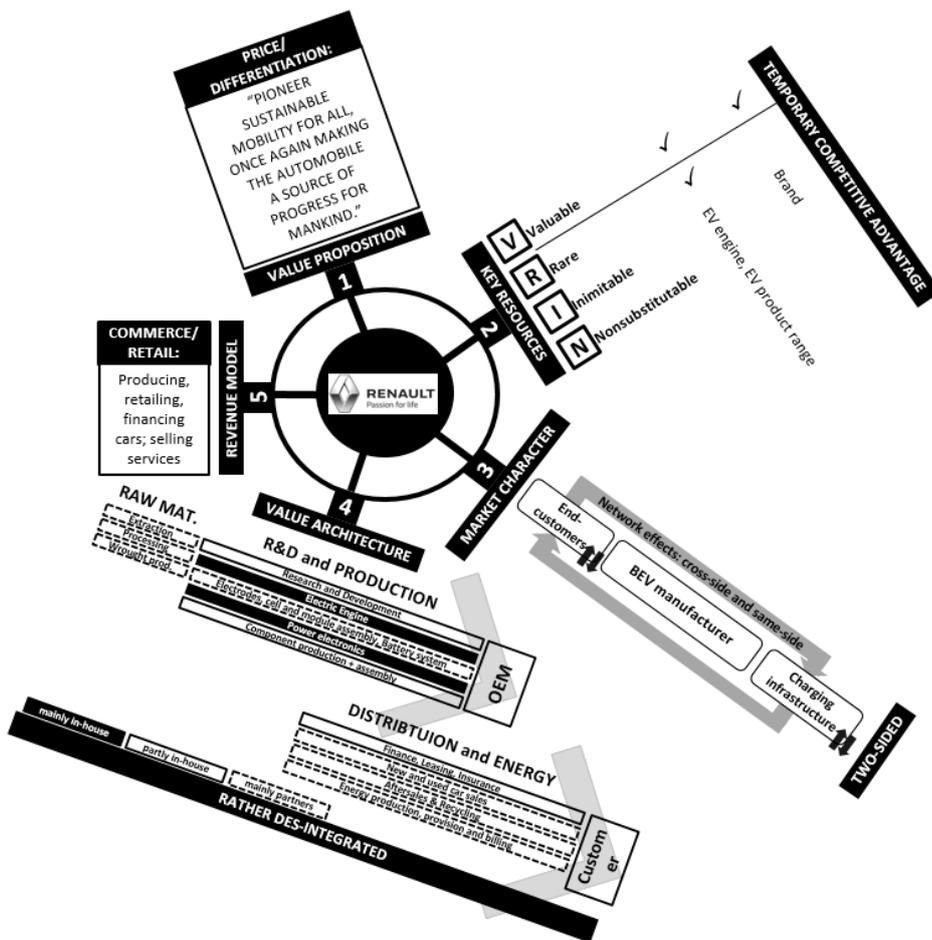
The value creation architecture of Tesla Motors can be seen as rather integrated compared to architectures of traditional automotive manufacturer as they fulfill quite a large part of the activities needed to produce and market their electric vehicles to the customers in-house, e.g., large parts of research and development, production, battery production with Panasonic, own sales and service outlets, own charging infrastructure (Dietl, Royer and Beckmann, 2013).

The revenue model is based on commerce/ retail as tesla produces and retails electric vehicles to mainly customers via the internet and the own Tesla stores and galleries.

In summary, this brief elaboration illustrates that Tesla's business model can be described in a holistic fashion with our business model wheel. Market characteristics become obvious as well as firm internal assets. Further, the value creation architecture turned out to be a specificity since Tesla relies a lot on own activities on the different market sides relevant.

In the next step the business model wheel is applied to Renault as another provider of electric vehicles. Renault in contrast to Tesla also manufactures and sells traditional cars with combustion engines which still make the majority of the company's sales. The following Figure 3 gives an overview of the analysis of the second player in our focus, i.e., the French vehicle manufacturer Renault. Here the business model is sketched regarding Renault's activities in the e-vehicle market.

Figure 3: Business model analysis of Renault



Source: own figure and analysis.

Renault’s value proposition is not only focused on electric vehicles. The company has a broad target market selling different types of vehicles with a slight tendency towards price awareness as the mass market clearly is in focus.

The key resources are – compared to Tesla Motors – rather hard to identify but Renault’s brand is well-known worldwide and thus can be seen as a valuable resource. Rare resources in the field of electro-mobility may be the company’s electric vehicle engine know-how and production facilities and surely Renault’s range of different electric vehicle products: Twizy, Zoe, Kangoo Z.E. and the Fluence (which, however, is not produced any more).

The e-vehicle market obviously for Renault shows the same characteristics as for Tesla Motors, i.e., the facets of a two-sided or platform market as elaborated above.

The value creation architecture around Renault's products sold in the e-vehicle market is characterized by much more des-integrated activities which are fulfilled outside of Renault such as sales and service by franchised dealers but also battery cell production as well as more parts of the research and development as well as production.

The revenue model is also focused on commerce/ retail in form of producing and retailing cars – with the slight difference that Renault also owns its own bank as a financing institute for end-customers.

In summary, Renault's business model in the e-vehicle market can be described in a holistic fashion with our business model wheel. Market characteristics become obvious as well as firm internal assets and resources. Further, the value creation architecture turned out to be less integrated and the products less differentiated compared to our first case Tesla Motors. Additionally, fewer resources could be found that can be classified as valuable and/ or rare.

Our findings implicate that both companies rely on in some aspects similar (revenue model, market characteristics) and in some aspects different (value proposition, resources, value creation architecture) business models.

5 Concluding Remarks

The section concludes with our findings regarding the application of the business model wheel as well as the framework's limitations which directly translate into implications for further research in this area.

We found using our business model wheel very useful to understand the differences of business models in the platform market for electric vehicles. Therefore, we think it is a fruitful avenue for

future research to build on this holistic conceptualization. The business model wheel is a proposal for further refining the business model toolkit and to enhance the ability of business model analysis for researchers and practitioners, explicitly considering market characteristics such as platform markets.

We have shown that the business model wheel can be applied for analyzing and comparing business models on the examples of the e-mobility activities of Tesla Motors and Renault. However, this should be seen as a first attempt. The model still has its limitations as it obviously cannot cover any detailed aspect of a company in the form applied in this first attempt. Especially the revenue model part seems to need researched in a more detailed fashion regarding operationalization and descriptions. Additionally, it might be interesting to compare business models with different industry backgrounds as well. However, we so far found the business model wheel a compact and easy-to-use framework for analyzing and comparing business models.

Regarding the investigated market for electric vehicles we have taken the example of a platform market in an early phase with some potential for the future. Environmental awareness as one relevant factor to be taken into account in many economies drives new mobility concepts such as e-mobility. However, for the incumbent vehicle manufacturers it seems to be quite a challenge to mobilize the network effects and at the same time keep the ball rolling in the established market for conventional vehicles. The business models of the incumbents in the car industry are less well adapted to the specificities of early stage platform markets than for such markets in a much later phase. One facet that became obvious in that context was the different value proposition as well as the different extent of integration of the value creation activities. Possible strategic avenues towards the establishment of an adequate business model may be quite different for electric and other vehicles due to the market specificities in the two segments.

In that context strategic as well as efficiency-oriented aspects are to be taken into account and it well is possible that in the mobility sector we will observe new players with different business models

endangering the competitive advantage of the large incumbents of the automotive industry as we know it today. One aspect in that context is the transformation towards selling services instead of products in many contexts: “Facebook, Google, and Uber are examples of service innovation and rapid growth. Clearly, these companies demonstrate a different innovation model than any product-based company (e.g., Ford, GM, or SKF). These product-based companies required decades to grow to the stock value that the previously mentioned service-based companies achieved in a much shorter time span” (Martin et al., 2016: 2397). “Every nook and cranny of the consumer economy is being “Uberized” by a business model that twins personal services with technology. [...] In particular, mobile applications are enabling start-ups to aggregate sufficient demand to support this new business model, often by capturing unrealized value from assets these start-ups do not own” (Smith, 2016: 383-4).

In sum, we can come to the conclusion that “the power of the platform” (Parker et al. 2016, p. 149) may have an impact on the competitiveness of business models, especially regarding the value creation architectures as well as strategically relevant resources. In that context it, however, does also become obvious that “constraints [should not only be viewed] [...] as challenges and potential sources of failure, but also as opportunities for designing innovative solutions” (Amit and Zott, 2015, p. 346)

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