

UNIVERSITY OF TWENTE.

A HYBRID BUSINESS MODEL SOLUTION: MULTI-SIDED BUSINESS PLATFORMS AS DRIVERS OF CHANGE

MASTER THESIS

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Abstract

Multi-sided business platforms are increasing in popularity. On the one hand, it creates a threat for incumbent firms, because platforms are progressively entering industries dominated by pipeline businesses. On the other hand, it unlocks an opportunity for incumbent firms since the adoption of platform practices can facilitate the competitive position within the market. This would transform incumbents into a hybrid business which is defined as a business engaging in pipeline and platform activities simultaneously. In extant literature only little is known about the hybrid business model transformation, hence, this research aims to create insights into how incumbent firms can leverage the power of platform business models in order to become a hybrid business. One qualitative, in-depth case study has been conducted to test and evaluate two theoretical frameworks on hybrid business model transformation. This has revealed several benefits and challenges based on which a total of nine recommended practices for hybrid business model transformation have been formulated.

The results indicate that pipeline businesses should build the platform around their core business activity. Thereby, they can utilize existing advantages like the existing brand equity, scalability of the brand portfolio and prior product and market knowledge. The exploitation of these advantages can help to overcome the challenges of building a platform. These include organizational restructuring, software and hardware architecture, ecosystem expansion, network effects, pricing strategy and market competition. The nine recommended practices serve as a guideline for incumbents to transform gradually into a hybrid by establishing a platform and maintaining pipeline operations.

This research paper enriches literature by testing and evaluating existing theoretical frameworks and offering deeper insights into the hybrid business model transformation. The practical contribution is related to the definition of recommended practices which can be used to guide incumbents willing to transform into hybrid businesses through the business model transformation.

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LIST OF ABBREVIATIONS

CAPEX	Capital Expenditure
Car.Software Org	Car. Software Organization
EPA	Environmental Protection Agency
MEB	Modular Electric Toolkit
MQB	Modular Transverse Toolkit
ROS	Return on Sales
VW	Volkswagen AG

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1 Introduction

1.1 Situation

According to Khanna (2016), the first industrial innovations lead back to Britain in the second half of 18th century, during the so-called Industrial Revolution. Britain was the pioneer in reinventing the production through significant advancements in technologies, methods and machinery. It was soon after followed by many other countries. Firms were steadily concerned with maximizing profits and competing with rivals. The focus was set on how to optimize the production processes to lower costs and how to market the products to create a greater demand. This type of business is often referred to as the linear product development business model. However, the linear product development business model, or often also referred to as pipeline business model, encompasses an important limitation. Eventually, improving product quality or supplementing a product family with a new product provides lower returns for the reason that markets get saturated (Khanna, 2016).

The introduction of internet and information technologies in the 1970s marks a new industrial revolution that affected all possible markets which has created new opportunities for business models exceeding the traditional linear business model (Parmentier & Gandia, 2017; Ustyuzhanina, Sigarev, Komarova, & Novikova, 2017). As highlighted by Vargo and Lusch (2016), one with increasing diffusion is the multi-sided business model which highlights the shift from a goods-dominant to a service-dominant logic. In a service-dominant logic, a firm's activity does not include producing and distributing a product as it does in a goods-dominant logic, it rather involves establishing an infrastructure for connecting relevant parties and supporting customers in co-creating value (Vargo & Lusch, 2016).

A multi-sided business platform consists of a common set of technologies, components, tools and services, generally of modular design, that acts as a base for product and service developments (Gawer & Cusumano, 2014). It serves as a foundation for offering value and leads to the emergence of ecosystems which enable users of the platform to co-operate, transact, innovate and co-create across borders (Gawer & Cusumano, 2014; Nambisan, Zahra, & Luo, 2019; Van Alstyne & Parker, 2017). However, the value creation of the platform ecosystem is determined by more factors than just the collaboration between platform users (Tura, Kutvonen, & Ritala, 2018). This includes choices made on the platform openness (Parker & Van Alstyne, 2008; Eisenmann, Parker, & Van Alstyne, 2008) and governance (Tiwana, Konsynski, & Bush, 2010; Gawer & Cusumano, 2014) along with the quality and management of customer expectations (Zhu & Iansiti, 2012).

Unlike product platforms, industry platforms create network effects which can grow exponentially (Gawer & Cusumano, 2014). Network effects arise when additional users of the platform generate value for existing users, thus, the more users a platform attracts, the more value it creates (Katz & Shapiro, 1985). The choices on the platform design must be aligned with one another since this is crucial for the value creation process (Tura et al., 2018). Although, multi-sided business models are increasing in popularity, many markets have not made use of them yet. Depending on the incumbents' willingness to adopt to this potentially disruptive innovation, it can either be seen as a threat or as an opportunity (Van Alstyne, Parker, & Choudary, 2016).

1.2 Problem Definition

The improvements in digitalization have increased the popularity of platforms which leads to disruptions in different industries. As stated by Osterwalder and Pigneur (2010) “a competitive business model that makes sense in today’s environment might be outdated or even obsolete tomorrow” (p. 210), hence, for incumbents who are not willing to innovate and rather want to follow their current pipeline business model, it imposes a threat. On the contrary, incumbents who are open to transform into a platform business can leverage this opportunity and strengthen its competitive position in the market. However, the adoption of a platform business model is an entire changeover for an incumbent following a pipeline business since it requires significant changes like developing new competences and making large investments (Van Alstyne et al., 2016). Thus, it might be appropriate to adopt multi-sided business practices gradually. This will not transform the current pipeline business model immediately into a business platform, but rather introduce a hybrid business model. A hybrid business model will combine the benefits of a platform business model while still maintaining the current pipeline operations (Endres, Stoiber, & Wenzl, 2019).

The activities of hybrid businesses are more complex compared to purely pipelines or platforms since they perform both activities simultaneously. Therefore, the establishment of a hybrid business model is rather challenging and unique in its nature. Although a few familiar companies, like Microsoft and Amazon, emerged in early years as hybrid businesses (Cusumano, Yoffie, & Gawer, 2020), only little is known about practices for transforming from a pipeline into a hybrid business. Thus, this research attempts to fill this gap by defining practices on how incumbent firms following a pipeline business model can transform into hybrids. This will assist incumbents whose industry is threatened by platform businesses to remain competitive. Especially, sectors like automotive, software, media and health care are heavily affected by the digitalization (Endres et al., 2019; World Economic Forum, 2016).

The research will be executed with an example from the automotive industry. Up to the present, the automotive industry has been strongly focused on the vehicle architecture, thus typically adopting a pipeline business model with linear activity flow. Trends like vehicle digitalization and electrification allowed for platform businesses like Google and Apple to enter the automotive industry. For traditional automotive manufacturers, this creates great challenges. On the one hand, they have to develop software capabilities in order to meet the market demands (Fletcher, Mahindroo, Santhanam, & Tschiesner, 2020). On the other hand, the competition does not only evolve around existing players in the automotive market but has opened to the technology industry as well. Also, the focus within the automotive industry is not the physical good anymore, but the software and services that can be offered with the vehicle (Ball, Cordier-Deltour, & Magrath, 2018). Therefore, in order to remain competitive, automotive manufacturers have to deliver in combination with the electric vehicle also a software that meets the consumer demands. This in turn requires changes in the current business model of the automotive manufacturers.

1.3 Research Goal

The research goal is two-fold. Firstly, to test and evaluate existing theoretical frameworks and identify practices for the design of a hybrid business model solution. Secondly, to advance the current literature on hybrid business models in the platform industry.

1.4 Research Lay-Out

1.4.1 Research Question

In line with the research goal, the following research question has been formulated:

How can incumbents leverage the power of platform business models to transform their pipeline business into a hybrid business?

1.4.2 Sub Questions

The following sub questions will guide the research so that an answer to the research question can be defined:

1. *How are platforms defined?*
2. *What makes platforms successful?*
3. *What are common platform failures?*
4. *What is a business model?*
5. *What is a hybrid business model?*
6. *How can incumbents adopt a hybrid business model?*

It must be noted that during the research only the research question will explicitly be referred back to. The sub-questions served as an orientation during the research to provide guidance to find an answer to the research question. So, they will not be addressed with an answer one by one.

1.4.3 Academic Relevance

The research builds upon relevant literature on hybrid business models and contributes to academic research in the automotive industry. The subject is of particular relevance due to its limited appearance in literature despite the increasing popularity. While there is extensive literature on pipeline business models and on multi-sided business models, only little is known about the emergence and existence of hybrid business models. Thus, this research aims to fill this gap in literature and contribute towards the theoretical development on hybrid business model solutions.

1.4.4 Practical Relevance

The research contributes to practice with encouraging a better understanding of the business operations through the use of the business model canvas. Moreover, considering the increasing trend for platform business models, managers can apply the recommended practices in order to shift towards a hybrid business model solution and thereby increase their competitive position in the market. While these practices have been developed based on case study research from the automotive industry, they can still be applicable to other industries as well. Thus, managers aiming to complement their pipeline business with platform transactions can test the recommended practices.

1.4.5 Research Outline

This research consists of five main sections. The first section discusses the theoretical background of pipeline and multi-sided businesses. This includes outlining definitions and key

characteristics to create a shared understanding of the terms used. It also formalizes the benefits and challenges for showcasing the trade-offs of each business type. The second section defines the meaning and importance of business models which will be used as a tool to delineate a systematic understanding of a firm's business operations. Additionally, the key differences between pipeline and platform business models will be underlined. In the third section, the study introduces existing frameworks for hybrid business model transformation to showcase the current state on hybrid business model literature. In the following section, the research methodology will be elaborated upon to provide details about the research design, data collection and data analysis. The fifth section deals with the execution of the empirical analysis. This contains the case study research with the example of an automotive manufacturer which will be evaluated in terms of the hybrid business model transformation. Thereby, the company will be tested using the presented theoretical frameworks in order to identify benefits and challenges faced during transformation and define practices for transformation. Finally, a discussion and conclusion will be provided.

Theoretical Framework

2 Platforms at a Glance

One of the most vital business phenomena in the current age are platforms. Platforms are a type of business which creates value by enhancing the exchange between different user groups (Muzellec, Ronteau, & Lambkin, 2015). The importance originates largely from the significant developments in technology and exponential growth of the internet which enabled in the first place the offering of products and services to groups of users in two-sided markets (Eisenmann, Parker, & Van Alstyne, 2006; Muzellec et al., 2015). Two-sided markets are defined as marketplaces where two distinctive groups of users interact with each other to create value. The benefit of a two-sided market is the common platform which connects the user groups and differentiates it from one-sided markets deriving value from one user group only (Rochet & Tirole, 2003). A major distinction between platform offerings and traditional offerings is that products and services offered on business platforms require complementary innovations from numerous firms in order to create value to the end users (Eisenmann et al., 2006; Gawer & Cusumano, 2014). According to Russo and Hughes (2000), a prerequisite for achieving successful complementary innovations is to establish a network of strong relationships considering technical, productive and organizational terms, and as an addition also social and economic terms. Therefore, it is only beneficial if the effort required for innovating is overruled by the demand to innovate since business platform owners typically lack the resources, capabilities and/or the expertise to create these innovations themselves. Thus, platform owners must ensure that once such a social system emerges, the community shares the same imagination. The shared imagination refers to the creation of a common meaning and understanding between the concerned parties which is established through the leadership and business strategy of the platform (Moore, 1996). Moreover, it is of key importance to the concept of network effects which is discussed later in this section.

Complementary innovations origin mainly from two causes, namely interdependencies and resource shortages (Gawer & Cusumano, 2002). Gawer and Cusumano (2002) refer to interdependence as the increasing importance of considering competitors' activities and strategies in the rapidly changing markets in order to sustain a competitive position. The second issue refers to the resource shortages that most companies are facing when attempting to create new and innovative products and services. Thus, they underline that a main objective of platform leadership is to create products which form the basis for other firm's innovations. However, according to Van Alstyne and Parker (2017), this does not imply that the platform leader is the only beneficiary: platforms should aim to offer win-win situations to all parties involved, which includes platform owner, product manufacturers and customers. This means that successful business platforms desire to maximize value for all parties involved (Van Alstyne & Parker, 2017). Thus, the essence of platform leadership is described by Gawer and Cusumano (2002) as "winning the holy grail": many are aiming for it but only a few can actually achieve it. This underlines a new form of competition where the business strategy of platform businesses shifts from focusing on collaboration and rivalry to coevolution (Moore, 1996). One of the many examples of a successful business platform leader is eBay¹, who acts as an intermediary between the seller and buyer (Hagiu & Wright, 2013). For every transaction which has been executed on eBay, the platform charges a fee which leads to the creation of revenue. From the seller's perspective, they can benefit from the platform by reaching out to a

¹ There are many more examples for successful platform leaders such as Google, Apple, Amazon, Alibaba, Airbnb (Van Alstyne et al., 2016; Zhao, von Delft, Morgan-Thomas, & Buck, 2019).

group of potential customers without having any additional costs and from the buyer's perspective, they have a variety of offerings in a single setting.

The parties involved in the business platform are said to be participating in an ecosystem (Moore, 1993). All suppliers and distributors involved in providing a direct contribution to the value creation and delivery of a product or service are considered to be part of the ecosystem (Iansiti, & Levien, 2004). Also, this implies that the success of the business platform depends on the success and health of the participants within the ecosystem (Iansiti & Levien, 2004; Moore, 1996). However, for stakeholders wanting to join the ecosystem, the latter must be big enough and provide sufficient benefit to the participants. This distinguishes business platforms from traditional businesses, namely, the ability to stimulate positive feedback loops between all platform participants, which are also referred to as network effects. This means that the more users join the platform, the more valuable it becomes to existing users within the platform (e.g., Facebook, Telephone, Mail etc.) (Gawer & Cusumano, 2014). Despite creating additional value for users in the platform, network effects can also act as barriers to entry in the sense that it becomes more challenging for competitors to attract participants which are already part of another platform (Hagi & Rothman, 2016).

According to Gawer and Cusumano (2014), platforms can be identified in two predominant forms, namely product platforms and multi-sided business platforms. In synthesis, product platforms consist of a set of assets and interfaces which build the foundation from which a stream of related product can be efficiently developed and produced (McGrath, as cited by Halman, Hofer, & Van Vuuren, 2006). Multi-sided business platforms are defined by Gawer (2009) as the base whereupon all parties involved in the ecosystem can create complementary and innovative products, services and technologies.

2.1 Product Platforms

2.1.1 Definition

Due to the intense competition and fast-changing demands of customers, firms are required to establish a greater product variety. However, greater product variety can lead to greater internal complexity, which is not favorable when managing product portfolios. Thus, firms have implemented the idea of product platforms (Halman et al., 2006). This has been done in order to reduce the level of internal complexity and maximize the bargain on investments made into product design, manufacturing and marketing (Krishnan & Gupta, 2001). At the same time, the firms are able to meet the different customer needs by offering a larger variety of products (Pine, 1993). In particular, with regards to the development of new products and incremental innovations, firms can make use of the product platform strategy by building related products with similar sub-elements (Gawer & Cusumano, 2014). This leads to the idea of building a family of products which share the same elements, modules and other features (Choi, Suh, & Park, 2019; Halman et al., 2006). Sawhney (1998) draws on a comparison between product platforms and siblings in a family who are different in their looks and character but share the same collection of genetic factors. Thus, product offerings should follow the same logic in consideration of design, production, marketing and supply, so that customers can recognize the product family of the individual products. Also, this indicates that different knowledge is required when establishing such a product family. The most important business roles providing this knowledge are managers, designers and engineers who are responsible for directing the multifaceted technology, perceptions and organizational exchanges which consequently influence the progression of the product family as a whole (Sanderson & Uzumeri, 1995). Thus, according to Sawhney (1998), managers, designers and engineers are enforced to shift their

way of thinking from “portfolio-thinking” to “platform-thinking”, where understanding the interconnection of offerings, markets and processes is essential to the growth, variety and success of the firm. Moreover, it promotes a common logic and structure within the firm which can be applied to individual products, but also brands, markets and business processes. In summary, product platforms aim to satisfy the diverse customer needs while sustaining a manageable level of internal complexity.

In conclusion, product platforms are used to reduce complexity, maximize bargains on investments and offer a larger product variety in order to meet different customer needs.

2.1.2 Modular Design

The underlying idea of product platforms is retrieved from the so-called modularity principle. As defined by Baldwin and Clark (1997), modularity is the concept of dividing a product or process into several sub-elements which are designed and operated autonomously, but together they form a complex product or process. The advantage of modularity is that it allows for higher flexibility in terms of design and use, where the design flexibility emerges from the distribution of visible and hidden data, and the use flexibility refers to creating a new product through mixing and matching sub-elements. The production of the sub-elements is usually shifted towards independent suppliers, who are specialists in producing the assigned sub-element, hence are able to offer high-quality products and services. However, during the production process the suppliers have to follow pre-set design rules to ensure that the sub-element will be compatible with the complete product. Each supplier is responsible for one small part of the complete product, which encourages innovation. This explains also why firms commonly arrange joint ventures, technological alliances and subcontracts (Baldwin & Clark, 1997). Robertson and Ulrich (1998) view platforms from a different perspective, namely that it consists of four assets, which form the foundation of product platforms, namely components, processes, knowledge and people. Components refer to the sub-elements of the complete product and the process defines how the sub-elements will be put together in the production stream and how they will be distributed in the supply chain (Robertson & Ulrich, 1998). The third asset marks the knowledge of the firm in producing the complete product, but also the technological expertise of the suppliers providing the sub-elements (Kim & Kogut, 1996). The fourth asset, that is people, addresses all members involved in the production of the final product and how the relationship between the parties is sustained (Robertson & Ulrich, 1998). In conclusion, platforms follow the idea of modularity where a complex product is optimized through separating it into unattached sub-elements.

To summarize, modular design relates to dividing a product into sub-elements which are designed independently to allow for a higher flexibility in terms of design and use.

2.1.3 Design Rules

The partnership between the firm and their suppliers follows strict design rules in order to make sub-elements compatible with the complete product. The increasing importance of an innovative mindset and high technological expertise is a significant criterion when entering a business cooperation (Baldwin & Clark, 1997) since the success of product platforming depends on rapid model replacements and model longevity (Sanderson & Uzumeri, 1995). Thus, the product architecture requires stability and systematic reprocessing of the sub-elements (Halman et al., 2006). As proposed by Baldwin and Clark (1997), the modular product architecture can be achieved by defining three elements in chronological order: the modular

architecture, the interfaces, and the standards. First, the modular architecture will be considered through defining what purpose and functioning the sub-element should achieve. In the second step, the designer has to establish its interface in the system which means the place of interaction, connection and communication with other sub-elements. Lastly, the standards are tested with regards to the compliance of each sub-element with the design rules. Some modules can be designed as fixed elements throughout the life of the product, but others might change or even be replaced over time (Baldwin & Woodard, 2008). However, the redesign or replacements can create thin crossing points between the sub-elements of the complete product (Baldwin, 2008), which means that the adjustments or changes have to obey the interface requirements (Baldwin & Woodard, 2008).

Conclusively, each sub-element must follow design rules to match other sub-elements in the production process whereby sub-elements can either be fixed or change over time.

2.1.4 Benefits and Challenges

The adoption of product platforms brings both, benefits and challenges. One of the long-term benefits of developing product platform is the economies of scale where firms can save significantly in fixed costs through improved efficiency and reuse of sub-elements for new product developments and product feature designs (Gawer & Cusumano, 2014; Robertson & Ulrich, 1998; Sawhney, 1998). Moreover, firms can benefit from faster time to market since new products are developed based on pre-tested and standardized sub-elements (Halman et al., 2003). This does not only accelerate the product launch, but also leads to improved product performance since firms establish a stronger focus on optimization of sub-elements (Halman et al., 2003; Robertson & Ulrich, 1998; Sanderson & Uzumeri, 1995). Also, the speed of innovation is greater when adapting product platforms since the production of each sub-element is within the responsibility of specialists with high level of expertise. The specialized firms have a greater capability to innovate and design new products while constantly improving the internal and external processes. The greater degree and speed of innovation leads to a greater variety of product and service offerings; thus, customers benefit from a broader option value (Baldwin & Clark, 1997). Next to this, Sawhney (1998) states the coherence and referenceability of products as markable advantages of product platforms. Customers can easily recognize and trace back the products to the related product family and establish a greater brand advocacy. These benefits are summarized in Table 1.

However, product platforms present also disadvantages. Firstly, product platform might not match all market conditions, so firms must carefully determine whether the product platform is the right approach for their customer base. Secondly, the development of the foundation of a product platform composes the most challenging sequence, because inaccuracies in the beginning can have large impacts on the future development of the product platform (Halman et al., 2003). Especially the competitiveness of the product becomes vulnerable when the product has a weak foundation, which in turn might lead to a market failure of the product. Therefore, the initial design and product architecture are essential for the success of the product and entail optimization and innovation on a regular basis (Meyer & Lehnerd, 1997). The steady optimization and innovation require not only time resources, but also financial investments in Research and Development (R&D) (Baldwin & Clark, 1997; Halman et al., 2003; Robertson & Ulrich, 1998). Moreover, the architectural innovation of the product platform can create the risk of creating barriers to the firm itself and constrain the innovative direction. Once the product platform has been established and customers are used to the product, it has to move into the direction in which it has been established, allowing only incremental innovations (Meyer & Lehnerd, 1997). Besides, the product innovation lies to a

great extent in the responsibility of external suppliers, which creates the risk of losing control over decisions regarding the product technologies (Gawer & Cusumano, 2014). In addition, product platforming creates an organizational risk since it requires a high collaboration of multifunctional groups inside and outside of the firm (Robertson & Ulrich, 1998) which consequently restricts the trade-off between commonality and distinctiveness (Thevenot & Simpson, 2007). The challenges of product platforms are concluded in Table 1.

Benefits	Challenges
<i>Speed:</i> improved efficiency and shorter time to market (Baldwin & Clark, 1997)	<i>Platform foundation:</i> mistakes in the foundation have high impact on further product development, weak foundation threatens product competitiveness (Halman et al., 2003)
<i>Cost:</i> economies of scale through reduced fixed and incremental costs (Gawer & Cusumano, 2014; Robertson & Ulrich, 1998; Sawhney, 1998)	<i>Investments:</i> steady optimization and high R&D costs (Baldwin & Clark, 1997; Halman et al., 2003; Robertson & Ulrich, 1998)
<i>Design quality:</i> focus on optimization since core elements are pre-tested and standardized (Halman et al., 2003; Robertson & Ulrich, 1998; Sanderson & Uzumeri, 1995)	<i>Direction of innovation:</i> Pre-defined direction for product developments (Meyer & Lehnerd, 1997)
<i>Coherence:</i> products can be traced better by customers within the product family (Sawhney, 1998)	<i>Control:</i> production of sub-elements is the responsibility of external suppliers not the firm (Gawer & Cusumano, 2014)
<i>Referenceability:</i> products become recognizable and have a strong brand advocacy (Sawhney, 1998)	<i>Organizational risk:</i> need for multifunctional groups, risk of failing balance between commonality and distinctiveness (Thevenot & Simpson, 2007)
<i>Option value:</i> customers have a broader variety of products to match their needs and demands (Baldwin & Clark, 1997)	

Table 1. Benefits and challenges of product platforming

2.2 Multi-Sided Business Platforms

2.2.1 Definition

The increasing trend towards digital businesses has created prevailing opportunities for multi-sided business platforms. According to Eisenmann et al. (2006) this type of platform does not mark a new phenomenon. However, its occurrence has increased remarkably over the last years due to the rise of the new digital infrastructure and the combination of digital technologies in products and service offerings (Nambisan et al., 2019). This includes primarily technological developments like the internet, big data and cloud computing (Eisenmann et al., 2006). The rise of platforms, which is also referred to as platformization exhibits the change from individual product offerings to service offerings which constitutes the foundation for innovation and value creation. A significant difference between products and multi-sided platforms is that the final product delivered to customers on a platform is not fully defined since the platform only provides the separate modular elements and not the complete end product (Nambisan et al., 2019). In other terms, the platform acts as an intermediary between different sides. Therefore, the platform owner is not the “master designer”, but rather acts as a

connector between the customer and the supplier (Gawer & Cusumano, 2014). This approach provides, as stated by Gawer and Cusumano (2014), indefinite scope for innovation on complementary products, services and technologies.

According to literature, initial multi-sided platforms were primarily present in the computing and telecommunication industry where the platform architecture enabled modular exchange of complementary assets like software and peripheral hardware (West, 2003). Based on more recent developments in literature, they can be defined as a common set of technologies, elements, architecture, services and relationships which a number of distinctive participant groups use as the basis to create and deliver value to the end user (Gawer & Cusumano, 2014; Hagiu, 2014; Muzellec et al., 2015). Moreover, Gawer and Cusumano (2014) describe multi-sided platforms as “manageable objects” that assemble multiple parties in order to create value, where the number of participant groups can vary depending on the goal of the platform. If the platform aims to increase the number of product offerings, a larger number of groups is more suitable. However, if the product or service quality is the main focus of the platform, then fewer groups should be integrated (Hagiu & Wright, 2015). Also, Nambisan et al. (2019) describes multi-sided platforms as an opportunity for multiple participants to cooperate in an open and flexible space without geographical or industry boundaries. As illustrated in Figure 1, the direct connection between participants removes a large dependency on foreign intermediaries and allows to interact directly with potential suppliers or customers across locations and industries (Hagiu & Wright, 2015; Lusch & Nambisan, 2015; Nambisan et al., 2019).

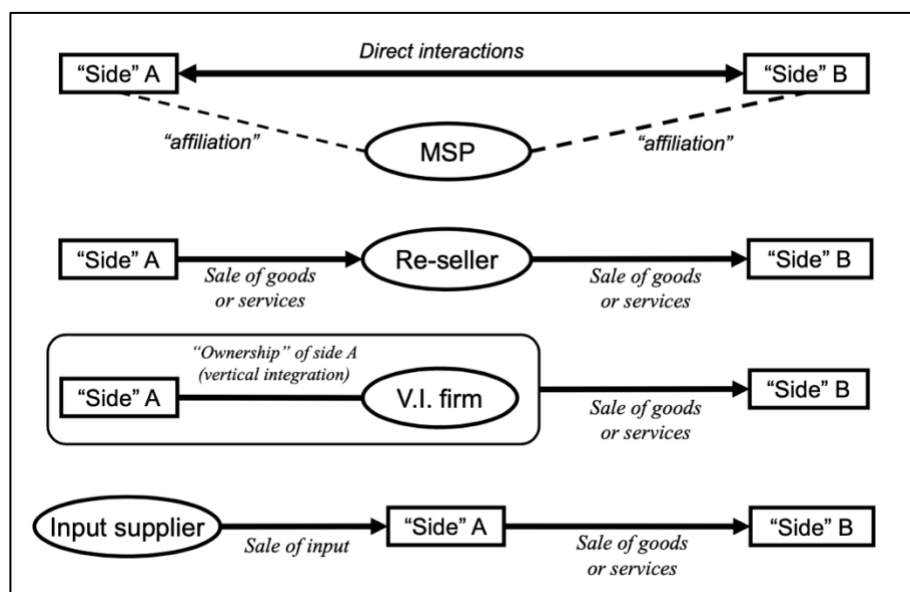


Figure 1. Multi-sided businesses vs. alternative businesses. Reprinted from Hagiu and Wright (2015)

The main platform transactions are, as denoted by Moazed and Johnson (2016), the “value factory” which consists of four process steps: (1) audience building; (2) matchmaking; (3) providing tools and services; and (4) setting rules and standards. On the contrary, Parker and Van Alstyne (2016) summarize the main transactions in three steps, namely (1) pull; (2) facilitate; and (3) match. Both models agree upon the fact that first platform users must be attracted in order for the platform to function. Hence, multi-sided platforms typically encompass two types of participants, a supplier side (B2B) and a buyer side (B2C). In most business models, the supplier side is monetized, which means that suppliers are paying a fee for using the platform whereas the buyer side is not charged for the use of the platform (Muzellec et al., 2015). However, the multi-sided platform generates for both sides positive network effects which emerge from the number of participants and interactions on the platform (Armstrong, 2006; Rochet & Tirole, 2003). Moreover, Rochet and Tirole (2003) state that each

participant side can be connected to multiple platforms, which they refer to as “multihoming”. An example is the media industry, where readers - which constitutes the buyer side - can subscribe to multiple newspapers. More examples of multi-sided platforms are presented in Table 2.

Industry	Exemplary firms	Platform sides
Search engines	Google, Bing, Yahoo	Internet users and online advertisers
E-commerce	Amazon, eBay, Alibaba	Buyers and sellers
Personal computer vendors	Microsoft	End users and third-party developers
Social web	Facebook, Instagram, Twitter	Users, advertisers and third-party developers
Mobile service providers	Apple, Google	Users, advertisers and third-party developers
Video games	Nintendo, Sony, Microsoft	Users and third-party developers

Table 2. Industry examples of multi-sided business platforms (self-created table)

In summary, multi-sided business platforms act as an intermediary between different user groups where one side is mostly subsidized. The different user groups are connected in order to co-create value, thereby network effects are established.

2.2.2 Platform Roles

Multi-sided platforms are owned and controlled by a provider and a sponsor. The provider takes the responsibility to coordinate platform transactions and act as the first contact interface for users on the platform. Conversely, the sponsor has no direct contact to any user on the platform. However, the sponsor is in charge of advancing the platform technologies and designing and improving the platform rules which indicate who is permitted to participate in the platform network. In many cases, the role of the provider and sponsor are executed by the same firm, however, the two roles can also be filled by different firms (Eisenmann et al., 2006; Van Alstyne et al., 2016). Considering this, the platform can be characterized by four different roles where the participants can shift from one role to another: (1) supplier; (2) buyer; (3) provider; and (4) sponsor (cf. Figure 2).

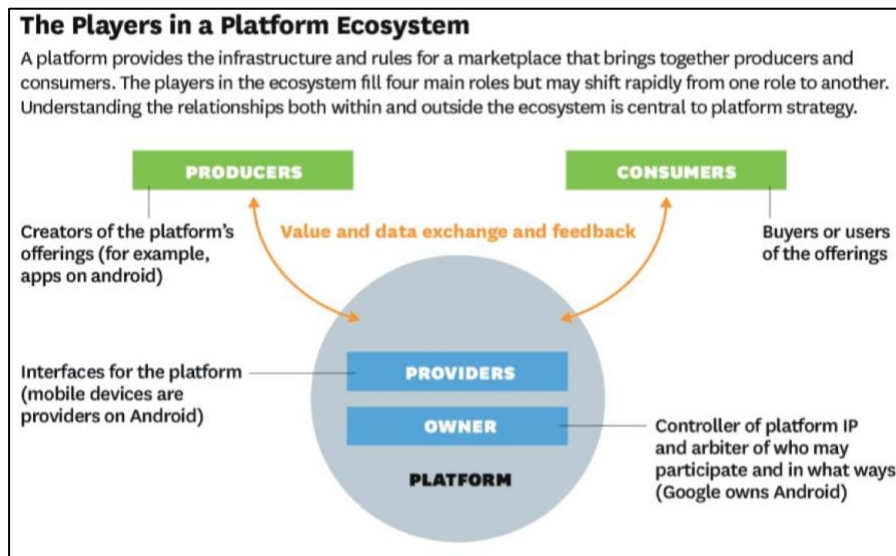


Figure 2. The roles in multi-sided platforms. Reprinted from Van Alstyne, Parker, and Choudary (2016)

Another way of looking at the sponsor is from the perspective of the platform leader (Gawer & Cusumano, 2014; Nambisan et al., 2019), which is sometimes also referred to as the keystone organization (Iansiti & Levien, 2004). The leader is the firm that controls the development of the platform and works towards establishing and realizing the value proposition to and for all users in the network (Muzellec et al., 2015). In addition, Iansiti and Levien (2004) enclose that the leader has to ensure platform productivity and efficiency, which means facilitating the interaction and transaction between platform users, thereby increasing the size of the network. The leader is essential to the platform since the success of the platform ecosystem depends on the success of the leader: if the leader fails, the platform will fail as well. The higher risk taken by the platform leader and consequently the more powerful position rationalizes its higher market capitalization (Iansiti & Levien, 2004).

However, in order to create monetization in the first place, the platform has to generate revenue which is created by the users of the platform and for every transaction on the platform, the leader captures a predefined amount for themselves (West, 2003). Iansiti and Levien (2004) have emphasized the keystone strategy as (1) creating value; and (2) sharing value. The leader establishes the required platform and offers the core elements for transactions and interactions within the network, which in turn creates the platform value. In order to keep the users on the platform, the generated revenue has to be divided fairly among the users, which is defined as the value divided by the costs of creation, delivery and maintenance of the product or service. This indicates that the design of the platform is an unceasing and dynamic process, which requires constant modifications in order to maintain a fair and trusted environment for all participants (Iansiti & Levien, 2004). Likewise, Gawer and Cusumano (2014) refer to this in terms of innovation, as the shift from product innovation towards process innovation for firms who are aiming to take the role of the platform leader. Nevertheless, this does not merely apply to the leader. Hagiu and Wright (2015) demonstrate two essential features of multi-sided platforms which go beyond the presence of network effects (Armstrong, 2006) and the pricing structure (Rochet & Tirole, 2006). First, allowing direct interaction between the platform participants. The platform leader defines the extent to which each side remains in control over the interaction, which includes pricing, bundling, marketing, quality and service delivery. Secondly, affiliating each side with the platform, which emphasizes the importance of platform users to be willing to steadily invest into platform-specific offerings and interactions. Commonly, this can involve fixed fees, resource expenditures or opportunity costs (Hagiu & Wright, 2015).

In conclusion, the platform is controlled by the platform leader who has to ensure that user interactions are productive and efficient since revenue is created through transactions between them. The revenue must be shared fairly in order to sustain a trusted platform environment.

2.2.3 Platform Characteristics

Platform Ecosystem

The network in which a multi-sided platform operates, can also be referred to as the platform's ecosystem. This term has been first introduced by Moore (1993), and just like biological ecosystems, the platform ecosystem consists of a community which interacts and shares the same environment and network "fate" in order to sustain the respective market regardless of their strength within the network (Iansiti & Levien, 2004; Moore, 1993). The interactions can on the one hand refer to the direct collaborative network of suppliers, distributors, manufacturers and technology providers that contributes to the creation and delivery of a product or service offering (Iansiti & Levien, 2004). On the other hand, it includes conditionally the network of competitors and customers if their behavior and feedback impact the development, production or delivery process of the product or service offering (Iansiti & Levien, 2004; Teece, 2012). Ecosystems are different from other governance forms in the sense that they emerge from modular architecture. They are similar to product platforms in terms of establishing a modular design, so that independent components can be mixed and matched by different providers without requiring high organization between them (Jacobides, Cennamo, & Gawer, 2018). Hence, they assist in coordinating the autonomous, but interlinked firms (Baldwin & Clark, 2001; Jacobides et al., 2018; Moore, 1993). The ecosystem can provide a competitive advantage to the platform which in turn performs as an entry barrier for competing platforms. As illustrated in Figure 3, the competing platforms can exist outside the platform's own ecosystem and interact with the outer environment (Tiwana et al., 2010).

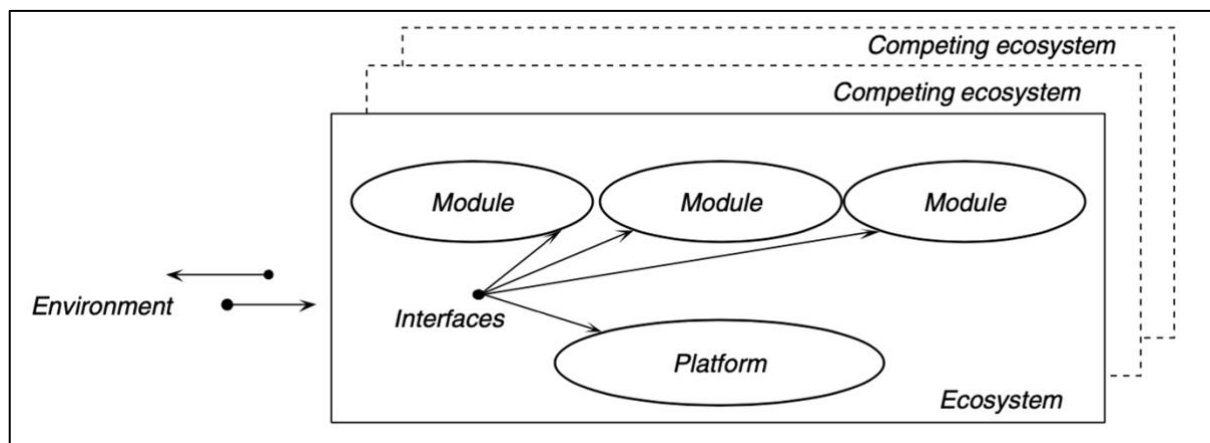


Figure 3. The platform-centric ecosystem. Reprinted from Tiwana et al. (2010)

As stated by Iansiti and Levien (2004), setting boundaries in ecosystems is impossible since the collaboration between the platform participants often goes beyond national borders and the value proposition can touch upon various industries. Buckley (2009) denominates this as the "global factory", where each participant is labelled as one of the three most common roles, namely orchestrator, integrator and complementor. Not only do these roles depend on each other (Jacobides et al., 2018), but also complement each other in terms of knowledge, competences and strategies (Nambisan & Sawhney, 2011). This implies already that the

performance of the ecosystem largely requires each participant to be in economic health. According to Iansiti and Levien (2004), there are three types of ecosystem health to be differentiated, the productivity, the robustness and the niche creation. The productivity is depending on internal improvements like the transformation of technologies and raw materials into innovative products while lowering the associated costs. The robustness refers to the ecosystem's ability to withstand market disruptions and niche creation contains the ability to offer product and service variety in order to meet customer demands.

However, it must also be clarified what the ecosystem's main focus is. Thus, Jacobides et al. (2018) suggest three groups which cover different purposes of ecosystem creation, namely the business, the innovation, and the platform ecosystems. The business ecosystem evolves around the leading firm and its respective environment, whereas the innovation ecosystem is directed by the value proposition or the innovation offered as an end product or service to the customer. Finally, the platform ecosystem centers around the organization of the platform and their participants. It should be stressed out that the groups of ecosystems are not mutually exclusive, thus platforms can have more than one focus on their platform. As the platform ecosystem emphasizes the shift from a goods-dominant logic towards a service dominant logic, Vargo and Lusch (2016) have summarized the key characteristics of platform ecosystems as follows (p. 18):

1. Platform service is the fundamental basis of exchange.
2. Platform value is co-created by multiple platform ecosystem actors, always including the beneficiary.
3. All platform ecosystem social and economic actors are resource integrators.
4. Platform value is always uniquely and phenomenologically determined by the beneficiary.
5. Platform value co-creation is coordinated through actor-generated institutions and institutional arrangements.

In conclusion, an ecosystem consists of the platform network which is based on a modular architecture where participants across countries or industries contribute to the value creation process. Thus, borders cannot be clearly defined.

Network effects

As previously mentioned, multi-sided business platforms establish positive feedback loops which lead to an increase in platform value. Thus, it is of crucial importance to stimulate the network effects in order to create greater value (Katz & Shapiro, 1985). There are two types of network effects, namely the direct and the indirect effects, where each effect can either be positive or negative (Nambisan et al., 2019; Rochet & Tirole, 2006). The direct network effects, or also called same-sided effects, arise when more users from the same side join the platform. For example, more users joining a gaming platform typically cause a positive impact on the user experience, because it increases the user base and encourages firms to develop high quality products. On the other side, the presence of many potential candidates constitutes a negative effect for job seekers on recruiting portals, since it increases the competition among them (Rochet & Tirole, 2006). Indirect network effects, also referred to as cross-sided effects, occur when the platform value for one side strongly depends on the number of participants on the other side of the network and vice versa (Hagiu & Wright, 2013). Multi-sided business platforms usually require the indirect effects due to the interdependency between supply and demand (Zhu & Iansiti, 2012). A typical example is the online marketplace eBay, the platform value created for the buyer depends on the number of sellers offering products and the other way around. In either case, the platform leader can obtain a competitive advantage which in

turn could lead to barriers to entry since the platform users are already part of one platform (Hagiu, 2014; Hagiu & Rothman, 2016), hence it becomes more challenging for competitors to acquire these users (Zhu & Iansiti, 2012).

In order to sustain the network, the platform must be established in the first place which according to Caillaud and Jullien (2003) requires strategic decisioning on which side to approach in the beginning. Thus, they named this after the causality dilemma which is typically known as the “chicken-and-egg” problem, bearing the challenge to decide which side to engage first and how to acquire more users, since the presence of both sides depends on the presence of the other one. The successful establishment of network effects can lead to returns in scale since the willingness of users to join the platform will be higher with the increasing size of the network (Caillaud & Jullien, 2003). Also, the platform leader can benefit from cost savings since usually multi-sided platforms only require high initial investments and afterwards costs only rise on marginal level (Eisenmann et al., 2006).

To summarize, direct or indirect network effects arise when the value increases through an increasing number of users joining the platform. The stronger network effects can improve the competitive position and create barriers to entry.

2.2.4 Benefits and Challenges

The position of platform leader entails both benefits and challenges. Similarly, to product platforms, multi-sided platforms allow by virtue of their modular design and loose ties a flexible mix and match between the supply and demand and foster economies of scale (West, 2003). Moreover, it promotes new opportunities for innovative business models and value propositions and strengthens the entrepreneurial spirit of the user groups which in turn accelerates meeting the demands of new emerging markets (Nambisan et al., 2019; Nambisan, Siegel, & Kenney, 2018). However, Teece (2007) points out that the degree of innovation and entrepreneurial spirit depends on the management capability of the platform leader, internally among platform users and externally in context with platform goals and the market. In addition, Nambisan et al. (2019) argue that multi-sided platforms provide a collaborative advantage among all platform participants, despite the leader being dominantly in control. This is due to the novel way of creating knowledge and relationships on a digital business platform. In brief, they summarize these advancements through platforms as: (1) new ways of internationalization; (2) new ways of building knowledge and relationships; (3) new ways of creating and delivering value to global customers.

Despite these benefits, platform leaders also encounter challenges. These concern in the first place the platform leader but have a transferring effect on the complete ecosystem and vice versa. This can include any type of risk like reputational, operational or legal risk (Nambisan et al., 2019). As mentioned before, multi-sided platforms include cooperation and competition simultaneously (referred to as “coopetition”), thus platform leaders must establish strategies and rules which not only facilitate the collaboration between users, but also provide space for competition. So, the leaders must be able to manage the complex strategic landscape of collaboration and competition in order to be successful. Moreover, making strategic decisions about the overall design of the platform like the degree of openness, rules and standards, pricing and governance are of crucial importance for attracting platform users. Thus, platform leaders must offer from the start a well-established environment which has to be maintained in a coherent manner. The management must be aware of the interdependencies and effects of their managerial and technological choices on the platform, internally and externally. With reference to the leader’s control over the pricing regulations and revenue sharing of the platform, the goal should be to establish a system with a fair setting where all

users can transact under their preferred conditions (Gawer & Cusumano, 2014). Iansiti and Levien (2004) categorize the risks faced by the platform leader into two categories, the physical dominator and the value dominator. The physical dominator indicates that a large portion of the network is owned and managed by the leader, which can possibly decelerate the innovative spirit and the emergence of a greater ecosystem on the platform. On the contrary, the value dominator is characterized by a leader who has only slight direct control over the ecosystem but monopolizes most of the platform value. As a consequence, the lack of investments in sustaining the platform leads to a breakdown. Table 3 summarizes the benefits and challenges encountered by business platforms.

Benefits	Challenges
<i>Flexibility:</i> flexible mix and match between supply and demand (West, 2003)	<i>Company risks:</i> reputational, operational, or legal risks (Nambisan et al., 2019)
<i>Cost:</i> economies of scale (West, 2003)	<i>Strategic landscape:</i> platform must enhance cooperation and sustain competition simultaneously (Gawer & Cusumano, 2014)
<i>Innovation Speed:</i> promotes new business opportunities and entrepreneurial spirit (Nambisan et al., 2019; Nambisan, Siegel, & Kenney, 2018)	<i>Investments:</i> high upfront investments (Iansiti & Levien, 2004)
<i>Collaborative advantage:</i> New ways of internationalization, building knowledge and relationships and creating and delivering value (Nambisan et al., 2019)	<i>Platform design:</i> determining level of openness, pricing, governance etc. (Gawer & Cusumano, 2014)

Table 3. Benefits and challenges of business platforms

2.2.5 Critical Success Factors and Potential Market Failures

Airbnb, Facebook and Amazon are only a few examples of successful multi-sided business platforms who have been able to design a business model acting as intermediaries between users. The reason behind their unique success remains difficult to replicate and generalize. However, they have made a few strategic decisions on common elements that helped to transform their business into the largest and fast-growing firm within their respective industries.

In general, a platform owner must fulfil two prerequisites in order to establish a platform: (1) provide a product or service that meets an unserved customer need and (2) have the value creation tools to act as an intermediary between the users (Parmentier & Gandia, 2017). Additionally, Abdelkafi, Raasch, Roth, and Srinivasan (2019) emphasize the importance of examining the competitive landscape, defined as the analysis of direct and indirect competitors. This can help to get a better understanding of the market, multi-homing costs and preference heterogeneity. On the contrary, Gawer and Cusumano (2014) argue that the success of the platform does not only depend on who can offer the most dominant or best product but is rather linked to who is able to provide the best platform in order to reduce search and transaction costs (Hagiu, 2015). This implies that formulating entry strategies is crucial for the platform design (Zhu & Iansiti, 2012). These entry strategies can be classified into four categories (Van Alstyne & Parker, 2017):

1. *The right level of openness*

Determining the appropriate level of openness for the platform is a critical factor for value control and capture (Van Alstyne & Parker, 2017). Opening the platform to outside users causes a compromise between adoption and appropriability (West, 2003). That marks a complex trade-off (Gawer & Cusumano, 2008). If the platform is too closed, the platform might not be able to reach a large user base. In contrast, if the platform is too open, it bears the risk that the owner loses control over the platform transactions which triggers value-destroying effects on the platform like causing misbehavior of participants or poor-quality standards (Van Alstyne & Parker, 2017). The right level of platform openness is, according to Chesbrough (2003), the one that allows participants to “plug-in” complements and further innovate, but at the same time allows the platform owner to remain in control over the platform. In practice, firms regulate the level of openness through the use of various tools. For instance, Airbnb uses user ratings to ensure quality of the platform and Apple and Google (Android) regularly filter out low-quality apps from Apple Store and Google Play, respectively (Van Alstyne & Parker, 2017).

2. *Establishing network externalities*

Multi-sided business platforms are defined as having at least two different sets of users interacting with one another on the platform (Van Alstyne & Parker, 2017). Thus, the platform owner has to get all user sides engaged in order to increase the platform value (Rochet & Tirole, 2006). Van Alstyne and Parker (2017) suggest approaching users in two-sided market platforms in two steps: first, to start with one side and create high value with small volume from single type transactions. Most commonly, the first user side to approach are customers which is usually related to high upfront investments. This is one of the reasons why developing a business platform is relatively costly (Van Alstyne & Parker, 2017). The costs that possibly incur can be illustrated via the Airbnb example. Airbnb hired professional photographers who took high quality pictures to convey a better experience of the service or product offering. With this investment, Airbnb was able to attract many customers who spread the word and recommended the service to potential customers (Blanding, 2016). Once a sufficient base has been established, the second step is to start approaching the other user side as well so that not only the value increases, but also the volume (Van Alstyne & Parker, 2017). This means that the platform has to expand and a possible way to do so is through digital marketing. Advertisement at low cost can be highly promising when it comes to reaching a greater user base, thus it is recommended to make investments in this area as well (Blanding, 2016).

3. *Finding the right pricing structure*

As the name implies, multi-sided business platforms serve multiple user groups, which also leads to multiple revenue streams (Van Alstyne & Parker, 2017). However, realistically the platform owner will not generate profit from all user groups, because - as mentioned before - in most cases they have to subsidize at least one user group to attract more users (Muzellec et al., 2015). In light of this, potential platform owners must carefully consider which pricing structure is suitable for their target user groups (Eisenmann et al., 2006). Charging user groups different prices is possible since multi-sided business are intermediation services which are not homogenous, meaning it allows to treat each user group independently from the other (Caillaud & Jullien, 2003). Thus, Hagiu (2014) proposes several strategic principles which help to identify the right pricing structure for the multi-sided business platform.

- 1.) User groups with less price sensitivity should be charged higher. This can be identified through the availability of alternative products or services.

- 2.) If there is no priced transaction between the user groups, then charge the user group higher that benefits more from the presence of the other user groups. An example is a business conference, which charges attendees, but not invited speakers.
- 3.) If there is a priced transaction between two user groups, then charge the user group higher that extracts more value from the other user group. The pricing structure should balance the value extraction and creation of their user groups.

4. *Maintaining good relationships*

A successful platform is characterized by being a fair player. This means that the value created through the platform has to be shared in a fair manner among all users (Van Alstyne & Parker, 2017). According to Chakraborty, Biega, Hannak, and Gummadi (2017) platform fairness can be defined through two key concepts. First, there is parity fairness, which states that all user groups should receive equal value. The issue that has been recognized with this definition is that not every user group should receive the same value since not all transactions are equally relevant to the platform. Thus, the second concept has been introduced as proportional fairness and can be subdivided into the actual benefit and the deserved benefit. According to the authors, the actual benefit is the platform value received from the user during a transaction, whereas the deserved benefit is the addition in platform value for all potential platform transactions until time if the user was successfully matched. Thus, the accepted definition of fairness for this study is “A platform is fair if over time, the actual benefit is proportional to the deserved benefit for every provider” (Chakraborty et al., 2017, p. 3).

Not only do fair conditions apply to the revenue recognition, but also to the conditions under which the transactions take place. The platform owner must be aware of the contribution of the users and show that each user is being valued. Otherwise, it could harm the relationship between the users and if one of the user sides feels undervalued, they might exit the platform. The consequence would be a platform collapse, because value can only be created if all sides are on board. Therefore, it is crucial that platform owners address potential conflicts of interest between the user groups as early as possible (Hagiu, 2014). Besides, building good relationships from a customer perspective also means to monitor customer relationships which can help to improve the service quality and improve the internal processes. Therefore, it is essential to build good and trusted relationship with all users, which consequently generates greater network effects and facilitates the interactions between the users (Van Alstyne & Parker, 2017).

Potential Market Failures

When considering the success factors, it might also be helpful to identify common failure factors of multi-sided business platforms. In particular, Van Alstyne and Parker (2017) argue that successful business platforms are rather an exception than the norm. The main reasons for market failure are related to the platform governance (Hagiu, 2014). The platform governance refers to the common rules, laws, practices and executive leadership of the business platform (Tura et al., 2018). The three most common market failure reasons are (1) lack of information and transparency; (2) risk of high competition; and (3) absence of strict governance. The first market failure relates to the lack of information and transparency regarding the product/service quality that is exchanged on the platform. This can lead to the so-called “lemons market failure” which addresses the problem of low-quality products/services driving out high-quality ones. The second failure deals with the risk of having too much competition within one user group, which possibly lowers the incentives of the other user group to invest in innovative products/services. Therefore, platforms usually sustain stronger control over the platform access to ensure that suppliers gain a sufficient return on their investments. The third market

failure relates to the absence of stringent governance. It is important that the platform owner establishes this in order to facilitate positive network effects and encourage complementary innovations (Hagiu, 2014).

3 General Overview of Business Models

The digital age has introduced many innovative disruptions which have taken over multiple markets. The reason why these firms were able to win over long-established enterprises was due to the fact that they had a good understanding of how their organization and the market functions. A popular tool to establish this understanding is the business model (Magretta, 2002). The business model provides a systematic view on how the business and the market operates and if the firm succeeds in creating a successful business model, it can result in a competitive advantage (Magretta, 2002; Pekuri, Pekuri, & Haapasalo, 2013). Moreover, business models deliberate the importance of value creation to and capturing from customers (Zott, Amit, & Massa, 2011). Especially, with regard to multi-sided business platforms, this constitutes a critical aspect since platforms emphasize the importance of customer-focused value creation. Thus, in order to successfully deliver value to customers, managers have to consider the business as a whole. This includes designing, comparing and analyzing the organization's value creation logic (Pekuri, Pekuri, & Haapasalo, 2015).

The visualization of the business model is considered an effective management tool for communicating and executing the firm's strategy (Osterwalder & Pigneur, 2010). Frequently, the terms strategy and business models are used interchangeably, however, business models and strategy are contrasting elements. A business model is more generic than the business strategy and they should be viewed as supplements rather than substitutes (Zott & Amit, 2008).

3.1 Theoretical Underpinnings of Pipeline Business Models

In traditional business models, often referred to as pipeline business models, the firm follows a linear stream of activities in order to deliver value to customers. After every step in the process, value is added until the final product or service is delivered (Alhava, Laine, & Kiviniemi, 2017). As mentioned, the adoption of business models has increased with the rise of the digital age. With the increasing popularity, the amount of research papers on business models has increased as well, leading to a collection of similar but somehow different definitions of business models. The great number of definitions available for business models allows scholars to assume that it is captive in an identity crisis (Shafer, Smith, & Linder, 2005). Pekuri et al. (2015) reviewed the literature and identified several mutual characteristics of business model definitions. They emphasize thereby the importance of four elements: (1) value creation; (2) value capturing; (3) value network; and (4) resources, capabilities and strategic decisions. On the contrary, Morris, Schindehutte, and Allen (2005) have concluded that there is no generally accepted definition for business models, therefore they have clustered the definitions found in literature into three categories:

1. *Economic*: relates to the revenue generation logic of a firm, which means how the firm aims to market and sell their product or service to customers. Important decision variables include revenue sources, pricing methods and cost structure. For example,

Stewart and Zhao (2000) define the business model as a description on how the firm plans to create revenues and attempts to maintain the in the long run.

2. *Operational*: concerns the architectural structure, which emphasizes the internal processes and the infrastructure design to allow value creation. Important decision variables are related to production and service delivery, administrative processes and resource flow. For instance, Mayo and Brown (1999) describe business models from a competitive perspective by arguing that it serves as a “key interdependent system” for competitiveness.
3. *Strategic*: takes on a broader view on the firm and the market environment. It relates to the firm’s market positioning and how the firm interacts across organizational borders and what the growth opportunities for the firm are. Important decision variables are stakeholder identification, value creation, differentiation, vision, values, network and alliances. For instance, Slywotzky (1996) refers to the business model as a tool to define their target customer and differentiate the product or service offering from competitors. Moreover, it serves for defining the firm’s activities, whether they will be performed internally or outsourced.

Morris et al. (2005) stresses the importance of the internal and external consistency of business models, whereas the internal consistency emphasizes the fittingness of elements within the business model and how they are interrelated, and the external consistency relates to the performance of these elements in the external environment. Accordingly, they propose an additional definition of business models aiming to unify the aforementioned elements as “a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets” (p. 727). This definition will be adapted for this study since it combines the relevant characteristics of business models.

3.2 Business Model Frameworks for Pipeline Businesses

Building on the theoretical perceptions of what a business model constitutes, many scholars have developed frameworks which aid in characterizing a business model. In order to be useful, the framework has to be simple, logical, measurable, comprehensive and operationally meaningful (Morris et al., 2005). Moreover, the frameworks serve the purpose to create a common language of, among others, the current business operations, the goals and the implications for strategy of the firm (Pekuri et al., 2015). It provides a transparent view of the company and how these elements are interconnected (Pekuri et al., 2015, Shafer et al., 2005). Morris et al. (2005) propose an integrative three-level framework with each six components, which address the decision-making process and cover different managerial actions. The first level is called the “foundation” and defines the core processes of the firm as the value proposition, the internal processes and competencies, the customer segments and the revenue stream. At the “proprietary” level the firm must develop strategic choices in order to hinder the replication of the value delivered to customers, hence creating a competitive advantage. If this has been established successfully, the firm should define relevant operating rules to provide guidance and discipline to the business operations for maintaining the competitive position, which is in the framework referred to as the third level, namely the “rules” level.

A more generic framework for characterizing a firm’s business model is the so-called business model canvas created by Osterwalder and Pigneur (2010). It consists of nine building blocks, which assist in understanding how a company attempts to create revenue. Hereby, the

nine building blocks emphasize four essential business sectors, namely customers, value proposition, infrastructure, and financial viability. Through the instrumentality of this model, an organization can derive and implement the individual strategy. The following provides an overview of the nine building blocks of the business model canvas including their definitions. Moreover, Figure 4 illustrates how the building blocks are interconnected. The right side of the business model canvas emphasizes the importance of the value, whereas the left side focusses on the costs related to the business operations of a firm. At the center of the model is the value proposition which connects the key partners with the customer segments.

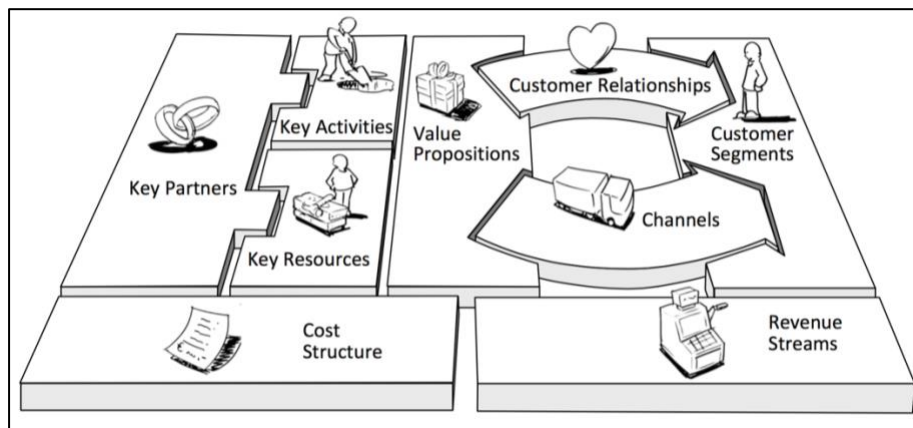


Figure 4. Building Blocks of the Business Model Canvas. Reprinted from Osterwalder and Pigneur (2010)

1. **Customer Segments:** This building block is concerned with the group of people that a firm aims to reach out to and serve as customers. It is clear that every firm has to establish an adequate customer base and the best way to approach them is to segment the ones with common needs, traits, and behaviors. The firm must define to whom the value of the product or service will be delivered. Moreover, it is important to identify in what type of market the firm is operating. This is due to the fact that the markets can define what type of customer segment is being targeted. For instance, in mass markets firms usually only focus on one large customer segment with similar needs, whereas in multi-sided markets firms must address multiple independent customer segments.
2. **Value Proposition:** Firms must define what value should be delivered to the customer segments. This is delivered in form of a product or service which meets the needs and demands of the respective customer segment. The value can either be of quantitative (e.g., price and/or speed) or of qualitative (e.g., design and/or customer experience) nature. It is crucial to differentiate the product or service from competitors, common ways of doing so are through offering price or risk reductions, innovativeness, performance or branding.
3. **Channels:** This building block is concerned with the delivery of the value proposition to the customer segments. More precisely, it covers the firm's interface with the customer base. The channels can serve in multi-functional ways, like enabling a purchase, delivering the purchase and providing customer support, thereby affecting the overall customer experience. Common channels include marketing, distribution and sales channels.
4. **Customer Relationships:** Not only is building customer relationships important, but also maintaining these. Therefore, it is proposed to define how the firm intends to do

so. The possible customer relationships range from personal assistance over automated services to co-creation. The interactions between the firm and the customer depends strongly on the image that the firm wants to promote to their customer base, either way solving the customers' needs and retaining them is the main focus of the building block.

5. **Revenue Streams:** This building block defines how the firm generates revenue from the customer segments. A revenue stream can differ per customer segment and per product or service offering. The generated revenue can either be a one-time payment (e.g., asset sale, advertising) or an ongoing/reoccurring payment (e.g., subscription fees, licensing, renting). In addition, for each type of stream, the pricing mechanism can differ in terms of either being fixed or dynamic. Fixed pricing is based on predefined prices, whereas dynamic pricing can change based on the market conditions. Also, the definition of this block helps to identify how many customers a firm requires in order to generate earnings (revenue minus costs).
6. **Key Resources:** In order to be able to produce the value proposition in the first place, resources need to be acquired. These key resources are the main tools needed for production or offering of the value to customers, sustaining customer relationships and consequently generating revenue. Depending on the type of business, different resources are required. For instance, a manufacturer requires capital-intensive production facilities, whereas technology firms emphasize human capital. Thus, key resources can be physical, financial, intellectual or human. These resources do not have to be owned by the firm itself, they could also be leased by them.
7. **Key Activities:** The framework also defines the firm's key activities, which means the key actions of the firm to function successfully. In fact, it is very similar to key resources in terms of including the most important areas of activity to produce and offer the value proposition, sustain customer relationships and generate revenue. Moreover, the types of activity differ along with the types of business. For manufacturer, this includes supply chain management and on the contrary technology firm define software development as their main activities. Other key activities can range from problem solving over to platform and network management.
8. **Key Partnership:** Value proposition cannot always be delivered by one firm. Therefore, it is essential for firms to identify who the key partners for their business operations are. The key partners can include strategic alliances, cooperation, joint ventures or buyer-supplier relationships. The motivation behind the partnerships can range from risk and uncertainty reduction over economies of scale to acquisitions of resources. In either case, the partnerships serve the purpose of delivering the best value possible to each customer segment.
9. **Cost Structure:** This building block emphasizes the costs related to the creation of the value proposition. Depending on the value aimed to be delivered to each customer segment, the cost structure can be either cost- or value-driven. Cost-driven business models usually aims to offer the lowest prices possible to the customers, and value-driven models aim to optimize the customer experience and offer premium products and/or services. Moreover, cost structures can have various characteristics like fixed costs, variable costs, economies of scale and/or economies of scope.

3.3 Business Model Innovation and the Importance of Platforms

A currently successful business model cannot assure a firm's competitive market position overtime. The business model must be difficult to replicate and sufficiently differentiated from competitors (Wrigley & Straker, 2016). Moreover, it requires managers to constantly innovate the current business model since as Osterwalder and Pigneur (2010) state, "a competitive business model that makes sense in today's environment might be outdated or even obsolete tomorrow" (p. 210). Thus, the actual challenge is to implement tomorrows trends into the business model and identify industry changes which is also referred to as disruptive technologies (Christensen, 1997). This is where business model innovation comes into play. Drucker (2001) argues that the most productive innovations are the once that offer new potential of satisfaction rather than an improvement of the product or service (as cited by Pekuri, 2015). The challenge for incumbents is not the identification of disruptive technologies as many scholars assume, rather the implementation of them into the current business model (Zott & Amit, 2008; Christensen & Raynor, 2013). However, Chesbrough (2010) partly disagrees with this notion and argues that typically the present success of business models determines what market information is included or filtered out for the corporate decision-making processes. Managers usually seek for market information that fits the current business success and rather work on building upon that, instead of considering the actual disruptive technologies. This concludes two distinct barriers of business model innovation, namely:

1. Recognizing the disruptive technology, but not knowing how to implement the change into the current business model which causes confusion.
2. Unintentionally, or sometimes even intentionally, filtering out or not recognizing potential disruptive technologies which causes obstruction.

It is important to overcome these barriers and experiment with business models. The experimentation commonly includes adopting platform practices since they appear to be most relevant in the current market (Van Alstyne et al., 2016). Van Alstyne et al. (2016) explain what the reasons are for platforms to overpower the traditional pipeline industries. Firstly, markets are the most natural places for suppliers and customers to interact and co-create value. Secondly, the advancements in digital technology help to expand businesses in terms of reach, speed, convenience and efficiencies remarkably in multi-sided business platforms. Thirdly, platforms can easily be scaled with close to no marginal costs. Fourthly, it enables entering other disorganized markets through building new efficiencies. This means that platforms create a market for unused capacity. An illustrative example is Airbnb, the company made use of this by offering apartments in cities with room shortages during well-visited events and conferences. Chase (2015) refers to this as the abundant excess capacity. In light of the disruptions caused by platforms, incumbents can view business platforms either as a threat or as an opportunity (Parker et al., 2016).

Returning back to the pervasive penetration of digital technology which has revealed that platforms play a key role in the innovation process. Some scholars argue that it is the main focus of most firms' innovation activities. Yoo, Boland, Lyytinen, and Majchrzak (2012) indicate that this is due to the increasing flexibility and open affordances that platforms offer. Moreover, they discuss two insights which are relevant for the inclusion of platforms into the business model. Firstly, digital technologies enable harnessing convergence and generativity which causes firms to rather adopt platforms than introducing new products to the markets. Secondly, digital technologies facilitate the use of digital data to organize and manage organizational processes which results in greater efficiencies. Thus, the business model innovation aiming to include platforms require several implications for organizational practice:

1. Firms must balance platform control and generativity, which refers to the degree of openness of the platform.
2. Platform interactions lead to challenges regarding the roles, rules and ownership, which refers to the platform governance.
3. Firms must establish a high level of knowledge, skills, learning processes, structures and strategies in order to enable horizontal integration of different products across industries, which refers to the platform ecosystem.

To conclude, business model innovations are essential for sustaining a competitive market position. Thereby, a forward-looking perspective is required to identify and implement disruptive technologies. In pipeline dominated industries, platform businesses are currently disruptive, therefore its implementation needs to be considered.

3.4 Characteristics of Multi-sided Business Models

In order to benefit from multi-sided business platform, it needs to be defined how the platform business model differs from a pipeline business model. An important characteristic is complexity which is typically higher for platform businesses since they encompass for example multiple (interrelated) customer groups. In fact, the complexity is a product of (a) the number of users, (b) the level of interrelatedness, and (c) their exposure to network externalities (Rumble & Mangematin, 2015). In Figure 5, an exemplary multi-sided business model is illustrated.

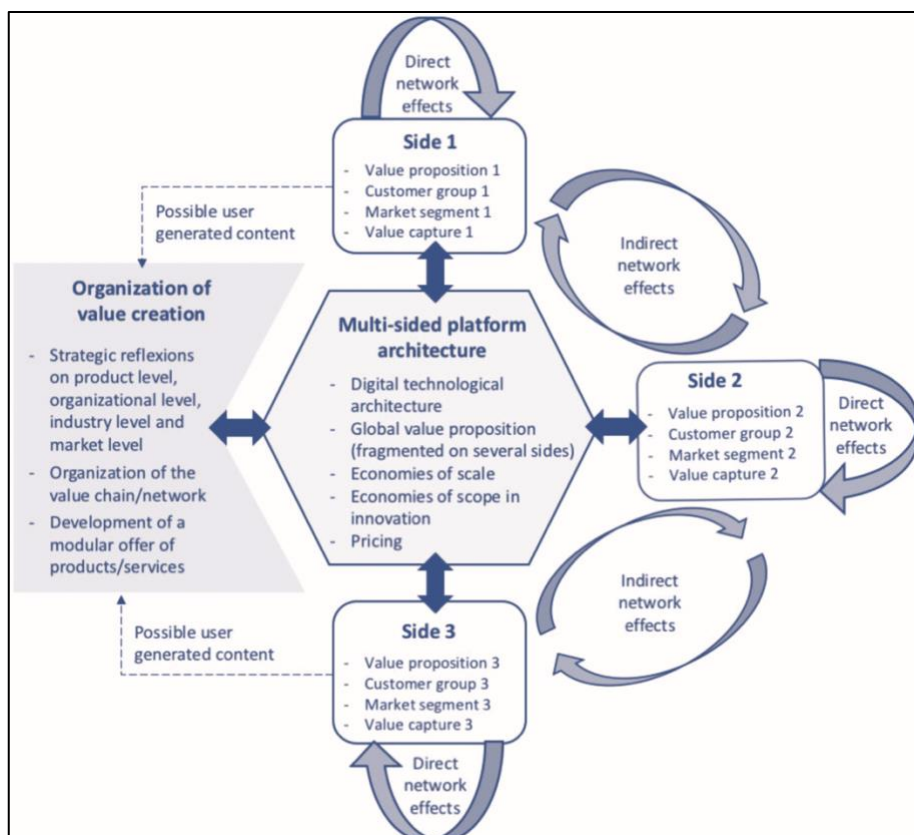


Figure 5. A Multi-sided business model with three users. Reprinted from Parmentier and Gandia (2017)

The three levels of complexity are shown as well as their interdependences. Moreover, in line with this assumption, Parmentier and Gandia (2017) propose two strategic propositions which should be addressed when designing a platform business model:

1. Value proposition must be delivered to complementary and independent customer groups in one or more market segments.
2. Value creation and capture must be organized with a technological platform that connects user sides and produces network effects.

Additionally, Ardolino, Saccani, Adrodegari, and Perona (2020) introduce a third proposition which is potentially advantageous to multi-sided business models, namely:

3. Potentially being able to track interactions between user groups involved.

In conclusion, platform business models are more complex than pipeline, therefore the higher complexity must be addressed in the platform design from the beginning.

In an empirical investigation, Ruggieri, Savastano, Scalingi, Bala, and D'Ascenzo (2018), investigate patterns of innovative start-ups for multi-sided business platforms. It is important to note that the sample firms should only provide a general overview on multi-sided business model patterns. It is not known whether the sampled firms were also operating in a pipeline business in parallel to it, however it is assumed that these were excluded from the study. Concerning the investigation of multi-sided business model patterns, the results offer several insights into similarities, but also a few differences in terms of their implemented business models. Most of the findings can be supported by existing literature.

Similarities can be observed first in their *Key Activities*. An important activity is the construction of the platform and the algorithm. The algorithm allows creating large data sets for economic purposes and enables continuous improvements. In terms of *Key Resources*, multi-sided platforms differ from pipelines through the high importance of the human factor. Owning resources for instance is not necessary, instead the employees must be highly qualified for managing the algorithm. Moreover, the business models strongly emphasize *Customer Relationships*. Mainly through customer care, like interactions on the phone, emails, and chats. The products or services are solely distributed through propriety *Channels*. Regarding the *Cost Structure*, most of the samples show low fixed costs which are related to managing the online activities.

Differences can be observed in the *Value Proposition* which vary from problem solving over to quality improvements to custom-tailored products. Also, the samples do not assign the same level of importance to their *Key Partners*. Some firms valued their key partners a lot, whereas others had no partnerships at all. Another difference can be observed in the *Customer Segments* which vary between multi-sided and niche markets. However, most firms address a multi-sided market over a niche market. Lastly, the firms also differ in terms of the *Revenue Streams*. Most firms generate revenue through transaction fees, subscriptions and/or sales. However, there are also firms who apply rental fees or charge for advertising activities. In light of these similarities and differences, incumbents can shape their business strategy and competitive position.

4 Introducing a Hybrid Approach for Pipeline Transformation

Adopting a platform business model in parallel to the pipeline business model can be relatively complex. Even though limited research is available on the hybrid business model solution, a few guidelines and practices can be identified. Markfort, Haugk, and Tangour (2019) build upon three frameworks guiding pipeline businesses through the adoption of a platform business

and propose an integrated framework which will be used in the subsequent analysis. The integrative framework attempts to cover relevant recommendations from literature. An example would be the recommendations proposed by Parker, Van Alstyne, and Choudary (2017) which are: (1) *enabling qualitative interactions*; (2) *matching user needs*; (3) *creating platform dependability*; (4) *encouraging innovative ideas*; (5) *using the end-to-end principle*; (6) *employing modular platform design*; (7) *preparing for market changes*; and (8) *improving platform quality*. The business model innovation process follows the phases introduced by Frankenberger, Weiblen, Csik, and Gassmann (2013), namely *Initiation, Ideation, Integration and Implementation*. Moreover, the challenges and changing mindset of managers is addressed to showcase what problems might arise when attempting such a transformation.

4.1 Guidelines for Adopting a Hybrid Business Model

Pipeline and platform business models do not have to be mutually exclusive. Van Alstyne et al. (2016) argues that firms can adopt a hybrid approach which includes both business models. In fact, the number of incumbents merging platforms into their business models has increased significantly over the years. A prominent example is Apple, which proved that a firm could do both incorporating a linear set of activities and at the same time creating a network for outside interactions. Despite the relatively high competitiveness of pipeline business models, it has been stated that if firms with platform business models enter the same market, they usually win (Van Alstyne et al., 2016).

With this in consideration, many large corporations have made first steps in adopting a hybrid solution of pipeline and platform business models. According to Van Alstyne et al. (2016), there are three key elements which have to be adjusted in the business model of incumbents who aim to become also a platform business. Hereby, they point out the complex and dynamic nature of business platforms compared to pipelines.

1. *From resource control to resource orchestration.*

In pipeline businesses, firms obtain a competitive advantage if they own resources which, as Barney (1991) defines them, should be valuable, inimitable, rare and non-substitutable. However, in platform business models, the firm does not own these resources anymore, instead they are provided by their network community. Thus, the competitive advantage has its roots in the established network.

2. *From internal optimization to external interaction.*

Pipeline businesses emphasize the importance of optimizing internal processes through effective labor and resource management. Contrarily, platform businesses focus on optimizing the external interaction with and between the users of the platform. Firms are not commanding processes, rather governing over the ecosystem.

3. *From a focus on customer value to a focus on ecosystem value.*

In traditional businesses, each value chain activity should contribute towards increasing the value of individual customers. In reverse, platforms focus on the value of all users in the ecosystem, which are not only customers anymore. This is accomplished through for instance periodic feedback-driven processes.

In line with these shifts, Markfort et al. (2019) propose an integrated framework which builds upon three commonly known frameworks by Parker et al. (2017), Choudary (2015) and Reillier

and Reillier (2017). The key elements of the three models have been systematized, compared and merged into a higher-level framework. The integrated framework consists of four phases split into six steps as pictured in Table 4.

Phases	Steps
1. Initiation	1. Analyze the core business
2. Ideation	2. Ideate products/services that serve the core business
3. Integration	3. Evaluate the possibilities for monetization
	4. Do not play an All-in-Game
	5. Think global, act local
4. Implementation	6. First come, first serve

Table 4. Integrated framework for transformation toward a platform-based business model. Adopted from Markfort et al. (2017)

1. Analyze the core business

Before the transformation takes place, incumbents must be aware of their most important revenue streams. Therefore, the first step is to analyze the core business, so that the key activities contributing towards the value proposition can be identified. Rather than reinventing a new business model based on platform-thinking, incumbents should establish a good understanding of their current operations and only then make adjustments in line with the firm's structure. Most commonly the core business activities are also the once that capture the most revenue. So, without considering the current business structures, incumbents might be overlooking advantages that they are currently able to offer. Moreover, grounding the new platform-based product or service on the key value proposition might lead to a greater attraction of customers.

2. Ideate products/services that serve the core business

The new idea of product or service should be on the one hand connected to the main business, but also innovative and reflect an outside-of-the-box way of thinking. A suggestion to facilitate the idea generation process is to brainstorm with potential users of the platform about their thoughts and needs.

3. Evaluate the possibilities for monetization

The ideas generated in Step 2 should be evaluated in terms of profitability. Platform businesses usually require high upfront investments. Therefore, it is an important step to dwell on the potential costs and revenues in the short- and long-run. However, if the platform-based idea is closely linked to the core business, it has a greater potential to create a competitive market advantage.

4. Do not play an All-In-Game

The transformation towards a platform-based business model should move slowly. The new business idea must be tested first, before it can be merged into the overall business. If the new idea has proven to be successful, the incumbent can consider replacing the linear value chain gradually.

5. Think global, act local

As mentioned before, one of the success factors of platforms is the fact that they focus on one side first. The same applies to the geographical launch. Local communities, especially if they are supportive of the business idea, shorten the feedback time. This allows to receive fast

feedback which is vital for the value creation process. Johanson and Vahlne (1977) refer to this as the Uppsala Internationalization Model, which indicates that local markets, which are known to the firm should be approached first. Then, firms can consider expanding to markets that are geographically and psychologically close to the local market. This approach serves to eliminate inconsistencies and help to improve the business idea.

6. First come, first serve

Many examples have shown that platforms require fast actions. This is not surprising considering its dynamic nature. Therefore, it is essential for first movers to constantly innovate the business model to keep the new platform successful through identifying new evolving customer needs and matching the value proposition accordingly. The chances of surviving in the industry are much higher if firms move quickly.

The integrated framework proposed by Markfort et al. (2017) will be tested in order to evaluate the firm's gradual transformation from a pipeline to a hybrid business. Moreover, the essential shifts from a pipeline to a hybrid discussed by Van Alstyne et al. (2016) will be assessed in order to establish a platform-based mindset.

4.2 Challenges of Hybrids and Lessons for Managers

Challenges of Hybrids

Every change brings challenges. Therefore, it is important to identify the challenges in advance in order to be best prepared. The same applies to incumbents attempting to conquer the market with a hybrid business model. Gawer and Cusumano (2007) argue that incumbents must fulfil two prerequisites to have platform potential and succeed as a platform leader. These are, that (1) the business idea must perform at least one indispensable role within the "system of use" or resolve a fundamental technical problem for many users in the target industry; and (2) the business idea must facilitate the connection between users or build on the existing system of use to expand and allow for new innovations. The authors indicate that without realizing these two conditions, incumbents will almost have no chance to succeed as a platform business.

Moreover, Gawer and Cusumano (2008) propose two strategic options which summarize the main challenges of "platform-leader wannabes". The first strategic option is called "coring" and refers to the creation of the platform. This may include, from a technological perspective, establishing a platform architecture, creating interfaces for external users, managing external innovations and attracting users to the platform. The business perspective is more concerned with the protection of the business idea and its profits and the creation of incentives for users in order to create complementary innovations. The second strategic option, also referred to as "tipping", deals with the competition between platforms. The activities relate to sales, marketing, product development and coalition building. Competition mostly evolves around technological standards, therefore, it is crucial to license intellectual property, preserve partnerships and build a strong brand awareness. A second possibility to win over competition is the right pricing structure, this requires in most cases subsidizing one user side, mostly the consumer side, in order to attract another user side. Another type of tipping is across markets, where incumbents include features from different markets into their platform to attract a larger customer base. Gawer and Cusumano (2008) note that the "coring" strategy option is not only applicable to large firms but can also apply to small and medium-sized enterprises (SMEs) who aim to become platform leaders. The reasoning behind this is that technological and architectural leadership does not depend on the firm size.

However, the “tipping” strategy is more challenging for SMEs since it requires the creation of an ecosystem for platform users (Gawer & Cusumano, 2008).

As discussed by Parmentier and Gandia (2017), the success of a multi-sided business strategy is rare. Especially for SMEs it forms a great challenge, because the “coring” and “tipping” activities require extensive resources which they might not be able to provide over time. As already stated before, the high upfront investments need a long time to become profitable. Therefore, the authors emphasize the importance of overcoming the lack of resources with adopting the right strategy for the multi-sided business model.

Lessons for Managers

On several occasions, literature implies the vital shift of business models from pipelines to hybrids and supports the argumentation with examples of successful firms like Apple, Microsoft and IBM. Cusumano (2010) agrees with this assumption and emphasizes the need for a new managerial mindset to address the shift from product-thinking towards platform-thinking. Moreover, platforms encompass other type of risks and have higher upfront investments, thus, strategic decisions must be approached from a platform perspective. An example is that the initial main focus of creating the best product for the customers shifts towards maximizing the user size to create higher returns (Cusumano, 2010).

A manager of a hybrid business model must be able to understand and operate both types of businesses and create synergies between them. An incumbent will not be able to transform into a platform without any investments, so managers have to maintain their key revenue stream and additionally create platform revenue. Managers must view the platform business as a secondary engine which creates additional revenue. If they fail to do so, managers might end up in strategic confusion (Gawer & Cusumano, 2008).

5 Methodology

A qualitative research approach will contribute towards the identification of recommended practices for incumbents willing to adopt a hybrid business model solution. An in-depth case study with Volkswagen AG as the unit of analysis has been conducted in order to provide a deeper understanding of the phenomena of hybrid business model transformation within the real-life context. Thereby, high-quality secondary data has been used to acquire a richer knowledge of the business model and test and evaluate two theoretical frameworks on their applicability. This has led to the identification of recommended practices for redesigning the business model in order to complement the incumbent pipeline business with platform activities.

5.1 Research Design

The aim of the research is to define recommended practices for adopting a hybrid business model which includes pipeline transactions as well as platform transactions. This means that current frameworks will be tested and evaluated in order to assess their applicability and identify further practices for transforming into a hybrid business. A widespread research approach within social science subjects is the qualitative research, because it addresses issues which involve human beings (Fallman, 2007). Opposing to other research approaches,

qualitative research deals with a subjective view on reality constructions. In other words, it helps to describe and analyze the world as it is experienced, interpreted and understood by people in the course of their everyday lives” (Cropley, 2002, p. 36). This is a crucial aspect, because business models are constructs of human beings, which means that people are giving directions to the business. Thus, with regards to the research goal, the approach will contribute to a deeper understanding of required practices for hybrid business model transformation and reinforce the theoretical development within academic research.

As defined by McMillan and Schumacher (1993) qualitative research is “an inductive process of organizing data into categories and identifying patterns (relationships) among categories” (p.479). This indicates that data and sense are created organically through the research context. While there are two dominant methods for this type of study, namely “grounded theory” and “case study”, this study will execute the latter. In case study research, the researcher studies persons, events, projects, institutions and other systems in order to gain an understanding of a unit (descriptive) or explore certain principles (explanatory). There are three common types of cases, namely key cases, outlier cases and local knowledge cases (Astalin, 2013). For this study, a key case will be studied in-depth to reveal challenges and benefits related to the hybrid business model transformation and thereby define recommended practices for the transformation.

The choice of case studies is justified when the research topic is large and highly complex, limited in existing theory, or depending on the context (Dul & Hak, 2008). For this research project, all three aspects are applicable to the topic under research. A hybrid business model transformation is a complex topic since it includes pipeline and platform business model elements which has obtained only limited attention in theory. Moreover, based on the fact that business models are highly unique and cannot be replicated easily, they also depend on the context in which they are placed. This means that practices might differ depending for instance on the industry or company size. This appears to be a solid justification for case study research.

5.2 Selection and Data Collection

As stated by Runeson and Höst (2009), case studies are not meant to be generalized, instead the purpose can be to explore or reveal phenomenon. Therefore, it is advised to select the unit of analysis intentionally. In this study, the unit of analysis is Volkswagen AG. The case has been chosen under the perception that it will reveal and/or confirm new and existing knowledge about the phenomena which will lead to the identification of possible practices for transformation. Before a choice was made on which company focus to take, the competitive landscape within the automotive industry has been examined. This helped to identify significant differences in the approach and attitudes towards hybrid business solutions. Thus, reasons for choosing Volkswagen AG include the high commitment towards electrification and availability of financial incentives to realize such a transformation. Also, after the emission scandal in 2015, the brand image of Volkswagen AG suffered highly. So, the company grasped the situation as an initiative to reposition itself in the market and thereby make changes to the business model. Thus, Volkswagen AG appeared to be a good fit for this study.

Data has been gathered through documentation analysis which is also referred to as an independent data collection method (Runeson & Höst, 2009). This means that a desk research has been executed. The desk research includes the collection of secondary data, which contain annual reports, organizational charts, newspaper and magazine articles, press releases, journals and websites. The main sources for acquiring the secondary data were the world wide web, university library and Nexis Uni. It must be noted, that in order to increase the validity,

triangulation of data should be used. In other words, data from multiple sources should be included in the study to ensure that the phenomenon has been grasped in the correct manner. However, considering the current pandemic, it was more than challenging to reach out the employees working for Volkswagen AG for conducting interviews. As an alternative to data triangulation, secondary data has been analyzed with a careful judgement (“critical eye”). Specifically, information from different data sources have been evaluated against each other to ensure that the information is valid and of high-quality. Figure 6 illustrates this process of comparing different data sources to each other.

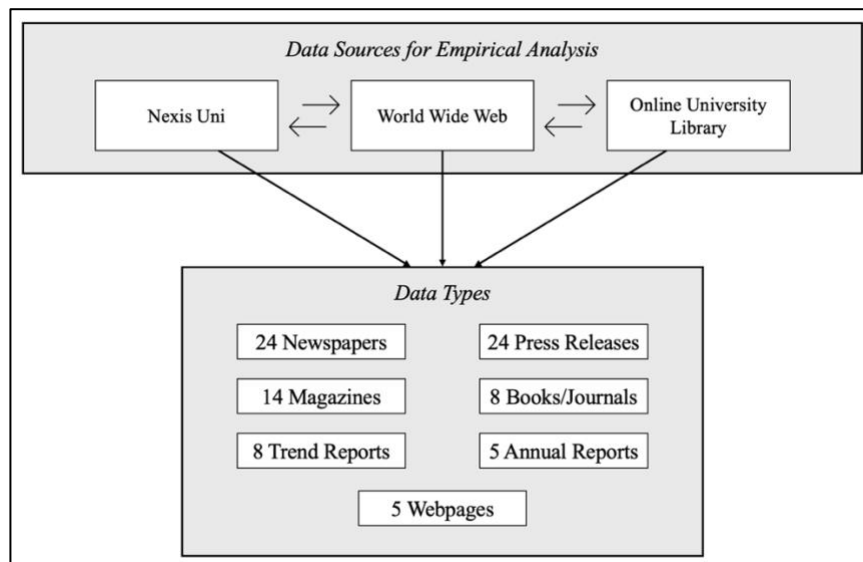


Figure 6. Data Collection Sources

For instance, newspaper insights have been compared to official press and news releases by Volkswagen to ensure their soundness. Also, the main data collection types include newspapers and press releases. Especially for the identification of strategic aspects, press releases appeared to be very helpful since they performed as alternatives to interview data.

In order to organize data during the data collection process, sub-categories have been defined after scanning the data for the first time. These categories included, among others, general information, strategy and business model. So, whenever new data was collected, it was assigned to the respective category. This safeguarded that no data is disregarded, and different sources could be compared to each other by identifying confirming or contrasting statements within the sub-categories.

5.3 Data Analysis

With the information retrieved from the archival data the business model canvas has been used to showcase on the one hand the current business model, but also to highlight the business model innovations which serve the transformation into a hybrid business. The reason for the use of the canvas model is that it covers all relevant key elements and especially emphasizes the customer relationships, value creation and value capturing process which are also essential aspects to business platforms. Moreover, it facilitates the understanding of how the business model elements are interrelated and allows easy adjustments in order to drive strategic changes. Many scholars have already used the business model canvas to investigate multi-sided business platforms (Muzellec et al., 2015; Wang, Tang, Jin, & Ma, 2014). Certainly, despite its benefits,

it presents also some limitations. In particular, it does not sufficiently address network effects and relationships among the user groups. In order to account for these, the theory from two frameworks, namely Markfort et al. (2019) and Van Alstynne et al. (2016), will be applied to the case study in order to test and evaluate the applicability of the guidelines and identify challenges and benefits related to the transformation. Markfort et al. (2019) introduces guidelines for transforming from a pipeline business model to a hybrid, whereas Van Alstynne et al. (2017) addresses the key shifts from pipeline to platform businesses. They serve as a help for identifying the challenges and benefits of pipeline business during the transformation. Based on that, recommended practices for hybrid business model transformation were defined. Figure 7 provides an overview of the data analysis process.

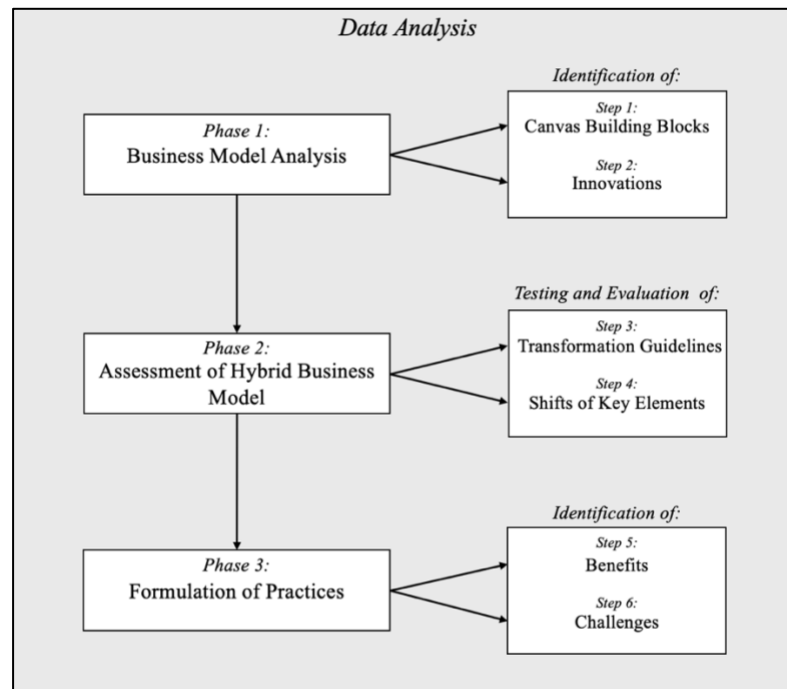


Figure 7. Data Analysis Process

Empirical Analysis

6 Case Study Research: Volkswagen AG

The automotive industry is challenged by new technologies and innovations in the market. Especially, the technology firms are turning into a real threat to existing automotive manufacturers. The reasons for that can be traced back to the trends which are currently transforming the automotive market. Koster, Kuhnert, and Stürmer (2018) have categorized these into five elements:

- 1) Electrified: In the future, all vehicles should become emission-free to meet environmental standards, so there is an increasing demand for electric vehicles.
- 2) Autonomous: Artificial intelligence and machine learning should enable cars driving by itself and only make the driver intervene in the least situation.
- 3) Shared: Cars will not be owned but shared. This is enhanced by the autonomous vehicle, which allows consumers to order self-driving vehicles to a pick-up point, thus enabling “on-demand” mobility.
- 4) Connected: Vehicles will be connected to the external environment. Services like entertainment, infotainment, voice control and internet access will be available in the car.
- 5) Yearly updated: Software-based vehicles will have integrated over-the-air updates which enable the consumer to always have the newest vehicle technologies and services.

Considering these changes, the vehicle will increasingly transform into a marketplace and allow customers to control their lives through the vehicle. These types of changes remind a lot of the smartphone industry (Singh, 2020). Thus, firms like Google and Apple are experts in the development of such operating systems and are currently working on transferring their expertise to the automotive industry (Bosler, Jud, & Herzwurm, 2017; Cooper, 2019).

Therefore, automotive manufacturer must keep pace if they want to prevent the technology players from taking over the automotive industry. So, they are increasingly focusing on developing software expertise in order to offer together with fully electrified vehicles also a matching car software (Ball et al., 2018). The focus on electrification and digitalization is aligned with the market trends that are impacting the automotive industry (Preuß, 2020). Also, the separation of hardware and software will allow for the emergence of a platform, which has potential to generate value through network effects (Fletcher et al., 2020). However, in order for automotive manufacturers to create a business platform next to their pipeline activities, it requires adjustments within the business model. A prominent example is Volkswagen AG (VW), who is currently within the transformation into a hybrid business.

6.1 Company Profile

The company of interest for this case study is Volkswagen AG, a German automotive manufacturer and seller headquartered in Wolfsburg. VW finds its roots in 1934, during which the Nazi union “Deutsche Arbeiterfront” has founded the company and developed the first VW model “Käfer” (Volkswagen AG, 2015). The vision of the firm was and still is to create the so-called “people’s car”. In other words, the intention was to make cars affordable to everybody (Bowler, 2015). However, due to the start of the second world war, VW manufactured vehicles only for military instead of daily use. During post-war, Germany was under the control of the

British Army who developed the Volkswagen Saloon and by 1950, VW added, next to their Käfer, a second car model, namely the Transporter. VW has survived a difficult time in history, therefore, it is often viewed as a German economic miracle (Volkswagen AG, 2015). Especially during the mid 1970s, VW has acquired multiple automotive companies and expanded thereby its portfolio creating the Volkswagen Group. To be specific, the Volkswagen Group controls another eleven brands: Audi, Seat, Skoda, Bentley, Bugatti, Lamborghini, Porsche, Ducati, VW Commercial Vehicles, Scania and Man (Magadia, Hanno, Kadoo, Akinsaya, & Carlson, 2019). Today, the VW brand belongs to the largest and most successful automotive manufacturers worldwide. The company employs a workforce of approximately 671,200 people and operates in two divisions: Automotive and Financial Services. The Automotive division consists of three business areas, which are passenger vehicles, commercial vehicles and power engineering. The division develops, manufactures and sells the cars. Moreover, they provide mobility solutions to their customers. On the other hand, as part of their Financial Services division, VW offers financing, leasing, direct banking and insurance activities, but also fleet management and mobility services to customers (Volkswagen Group, 2019).

In 2015, the success of VW was overshadowed by the diesel emission scandal. The Environmental Protection Agency (EPA) discovered that VW car engines sold in the US were equipped with a manipulation device to hedge diesel emission tests. The software allowed recognizing when the car is tested and manipulated the performance of it accordingly to reach better scores on the test (Gates, Ewing, Russell, & Watkins, 2017). No technical details have been officially published by the EPA about the functioning of the manipulation device, but the agency did declare that the engines were able to detect test environments in multiple ways like monitoring speed and air pressure. During the tests, the manipulation software switched modes and ran under lower power and performance. However, when the car was on the road, it released up to 40 times more nitrogen oxide pollutants compared to what is permitted in the US (Hotten, 2015). Not only the VW brand vehicles were affected by the scandal, also other brands of the Group had the manipulation device integrated such as Audi, Seat and Skoda. Shortly after the revelation, VW admitted the fraud in the US and several other countries. The scandal caused fines, compensations and legal costs approximating around €30 billion (Jolly, 2019), but also a 40% decline in the share price value of the company in only two weeks. However, the consequences were not only of financial nature. The brand image and credibility has suffered immensely under the scandal (Colvin, 2020; Jung & Sharon, 2019). Before, as stated by Anderson (2015), VW had the brand image of being frank, honest and environmentally friendly, however, their actions did not align anymore with these propositions which imposed an opportunity for rivals. In order to prevent customer losses and rebuild trust, VW has heavily invested in environmental regulations. With a new leadership team, VW focusses on replacing the combustion engine slowly with an electric one to reduce environmental damage caused by automotive. Empirical evidence states that VW benefited from this scandal in the sense that it was a wake-up call. VW was so much invested in fuel development that it did not recognize the trends happening outside of their organization (Glinton, 2018).

Recently, VW has completed a three-year monitorship with an independent inspector in order to make the company activities more transparent. Moreover, the company has declared that they transformed and intensified its organizational structures and systems in several business areas such as governance, risk management, compliance and legal (Sun, 2020). Next to the internal changes, they have also shifted their focus on electric vehicles. In line with the new strategic focus and vision, VW has launched the first fully electric vehicle of the I.D. family, which serves the mass market (O’Kane, 2019).

To summarize, VW stands for an economic miracle, from the ashes of the second world war, VW has transformed into one of the most successful companies worldwide. The broad brand portfolio reflects the company's diversity, however, due to the diesel emission scandal, VW has suffered from financial and reputational damage. To compensate for this damage, VW is transforming its core business around electric vehicles to meet customer demands for greener mobility solutions.

6.2 Competitive Landscape

Technology giants like Google are an increasing threat to the automotive industry. Not only did they develop their own car software which is fully compatible with their own existing operating system, they have also started manufacturing their own electric vehicles. For the automotive industry this is a huge challenge, because it requires significant new capabilities for developing such a platform. However, the automotive firms cannot afford to remain passive, therefore, they have built their strategies around electric vehicles and software development. Burgard (2020) differentiates between three approaches: (1) Cooperation: car makers partner up with tech giants to fill the lacking capabilities; (2) Counter-Attack: car makers will invest largely in the development of own operating systems and take the battle against tech giants; and (3) Industry Standard: car makers unite in the GENIVI Alliance to fight tech giants together through an open-source solution based on Linux. To gain an understanding of the strategies of other big automotive manufacturers, several examples have been investigated in detail, namely Daimler AG, BMW, Tesla Inc. and Ford Motor Company.

6.2.1 Daimler AG

The history of Daimler AG leads back to 1886, where Carl Benz and Gottlieb Daimler developed, independently from each other, their first automotive. Both established their own company before they decided to merge during the First World War (Daimler AG, 2011). Today, Daimler AG belongs to the most successful car companies in the world. The company's divisions include Mercedes-Benz Cars & Vans, Daimler Trucks & Buses and Daimler Mobility. The company is known to be one of the largest manufacturers in the industry and stands for its luxury automotives. Next to manufacturing activities, Daimler Mobility offers financing, insurance brokerage, leasing and innovative mobility services to its customers (Daimler AG, 2019). The increasing trend of sustainability and digitalization have not surpassed Daimler; therefore, they focus stronger than ever on becoming energy neutral and improving their software capabilities. According to Daimler AG (2019), this will require them to adopt platform thinking. The goal is to provide customers the "Best Customer Experience 4.0" with the help of a digital transformation (Essert, Liesenfeld, & Stauber, 2020). The customer and data must be put in the very center of the transformation in order to deliver the most luxurious customer experience (In der Smitten & Sedlmayr, 2018). The first step towards this goal is the cooperation with Microsoft (Sedlmayr, 2019). Electric vehicles are the main road towards energy neutral mobility solutions. Moreover, they provide the opportunity for manufacturers to transform them into autonomously driving cars. However, since the Artificial Intelligence and machine learning technology requires large amounts of data, Daimler has decided to create a cloud environment, named eXtollo, on the Azure platform of Microsoft. The switch towards an external data storage provider was a challenge to Daimler, because they feared to lose control over their own data. However, as reported by Lardinois (2019), Daimler

has achieved to remain in full control with an encryption key. Moreover, in line with Daimler's goal to create the best driving experience, the firm has rolled out the first fully connected Trucks with the integrated Multimedia Cockpit Interactive. The additional value provided by the Cockpit is that, among others, the platform is open for using external apps and receiving warning messages about the condition of the vehicle (Daimler AG, 2019).

To build upon this idea, Mercedes-Benz has taken initiatives to facilitate the co-creation of value with external parties and introduced the concept of the "cooperative vehicle". The idea behind the concept is to gain knowledge from outsider parties, irrespective of their industry. Thus, the aim is to maximize the innovation (In der Smitten & Sedlmayr, 2018), which is strongly emphasized in the new strategy of Mercedes-Benz that was announced in October 2020. The new strategy consists of six elements (Contify Automotive News, 2020):

1. Think and act like a luxury brand.
2. Focus on profitable growth.
3. Expand customer base by growing sub-brands.
4. Embrace customers and grow recurrent revenues.
5. Lower cost base and improve industrial footprint.
6. Lead in electric drive and car software.

The pillars demonstrate the shift which Daimler is undergoing, namely moving from product development resources and capabilities towards electrification of vehicles and investments in innovative technologies (Roberts, 2020). A central role plays Daimler's development of their own car software, namely the MB.OS operating system. The introduction of this is planned for 2024 and should lead to an improved customer interface and centralize the control of all Mercedes-Benz car domains (Lye, 2020). The customer will be able to control the Mercedes-Benz car from all different end products, have access to the newest features through software updates and have a greater speed in experience. The company aims to be the lead of the automotive industry with its ambitious product development targets and outline of the software-focused technologies (Contify Automotive News, 2020).

To conclude, Daimler AG is one of the leading players in the automotive industry with great potential to digitally transform its business. Technology challenges like autonomous driving are approached through the external data storage base eXtollo. Moreover, Daimler firmly believes in the co-creation of value and has opened various platforms to external parties in order to derive the most innovative ideas from stakeholders. Also, in line with Mercedes-Benz's new strategy, the firm has announced to launch its own car software in 2024.

6.2.2 BMW Group

BMW stands for Bayerische Motoren Werke and belongs to the world's largest automotive manufacturer. Founded 1917 in Munich, the company was first specialized in aircraft engines soon after which they slowly found their way into the automotive industry (BMW AG, 2020). Since then, around 133,000 people are employed across the three main segments, namely Automotive, Motorcycles and Financial Services. Within the Automotive segment, BMW owns the premium brands BMW, Rolls-Royce and MINI. In light of the drastic changes in the automotive industry, BMW has announced five R&D topics, which will be accelerated in the following years. These five topics are (BMW Group, 2019):

1. Design: BMW aims to maintain its strong position in the design of the premium cars, which is the high recognition value due to their aesthetics and technology.
2. Autonomous: The highest priority for BMW in the development of autonomous vehicles is the safety of the driver. Thus, BMW Group and Daimler AG have joint

forces to co-develop the technology around the autonomous driving vehicle and even offer it to external manufacturer for greater innovation speed.

3. Connectivity: The customer-oriented approach at BMW has reinforced the strong focus on the connectivity of all digital services. The customer should have the best driving experience through a continuous optimization of the vehicle's software.
4. Electrified: In 2019, BMW has already achieved to bring 500,000 hybrid electric vehicles on the roads in 11 different models. The firm aims to strengthen its position in the future even more.
5. Services: The customer experience when using BMW services is essential, thus they are constantly investing in the optimization of the digitally provided mobility services.

The firm is heavily investing in new technologies like digitalization, connectivity and autonomous driving, which has unlocked gates to new ways of experiencing and organizing a vehicle drive (Contify Automotive News, 2018). Recently, BMW has announced to partner with Alibaba to realize its digital strategy and thereby focus intensively on the relationship with dealers. The idea is to take advantage of Alibaba's platform capabilities and fully integrate services like viewing and purchasing a car, but also maintain it on Alibaba platforms (Taobao, Alipay, Amap). This is an important strategic move of BMW, because it goes beyond its own industry and opens the exchange of innovation (Business Wire, 2020).

The strategic partnership has underlined BMW's position towards the future of the automotive industry, specifically BMW approaches the industry from a more digital platform perspective (Horn, 2020). Therefore, the focus is strongly set on building an ecosystem around the mobility services which they have named myBMW (Horn, 2019). It runs currently with the BMW Operating System 7 whose update is by far the largest over-the-air update within European manufacturers. The update includes several new features like the BMW Map and connected parking. Moreover, BMW has achieved to make the software seamlessly compatible and easy to use with Androids top optimize the user experience. An additional feature that has been introduced is the BMW Intelligent Personal Assistant (Urban, 2020). The Assistant helps to connect through voice with the car and functions similar to the Amazon Alexa technology (Horn, 2019). With the technological expertise, BMW has created its own ecosystem with 11 million connected vehicles in 45 different countries. The customer data is saved in a cloud and is available beyond the life cycle of the vehicle (Contify Automotive News, 2018). The aim is to remain in control of hardware and software and fight so against the tech giants (Horn, 2020).

To conclude, BMW is one of the pioneers in the digital transformation. They have established very soon already their own car software and already connect millions of customers. The company relies on strategic alliances with Daimler AG in the autonomous driving technology development and partnerships with Alibaba to complement each other's capabilities in terms of platform establishment. It is obvious, that BMW is making the shift towards becoming a platform business and is currently developing the capabilities to remain competitive against the technology firms.

6.2.3 Tesla Inc.

In 2003, a group of engineers founded the automotive company Tesla Inc. with the ambition to show that electric cars can offer the same performance as regular gasoline cars (Tesla, n.d.). Headquartered in Palo Alto (CA), Tesla employs around 48,000 employees at various properties in North America, Europe and Asia (Tesla Inc., 2019). With its products, consisting of fully electric vehicles and energy generation and storage systems, the company has achieved to be the "first vertically integrated sustainable energy company" in the world (Tesla Inc., 2019,

p. 1). As a pioneer for fully electrifying the vehicle, Tesla has shown from the start that they are different from regular automotive manufacturers. The firm offers an, for the automotive industry, unusual mindset. To exemplify, Tesla sells their electric vehicles directly to their customers through their online website and showrooms, whereas ordinary automotive manufacturers use dealers as an intermediary for the automotive sales (Fox, 2020; The Future Factory, 2016). Also, the firm does not invest much into their marketing strategy, the co-founder and predominant face of the Tesla brand, Elon Musk, rather communicates through social media with clients and relies on the word-of-mouth from customers (The Future Factory, 2016). With its prioritization of technology and unique mindset, Tesla has achieved to become a successful and well-known brand within an industry that is highly difficult to enter.

One reason for the great success of Tesla leads back to its strong digital strategy (The Future Factory, 2016), namely, to transform the architecture of hardware and software (Furr & Dyer, 2020). With the goal to enhance the customer experience, create cost savings for the customer and reduce the carbon emissions (World Economic Forum, 2015), Tesla visions to offer entirely electric and smart vehicles to customers (Financial Press, 2020). One step into the realization of this, is with the help of over-the-air software updates for the electric vehicles (World Economic Forum, 2015). The software updates ensure that the Tesla cars are equipped with the newest technologies and become better over time. This highlights a revolutionary development in the automotive industry, where until then, cars became outdated from the time of the sale (Fox, 2020). The over-the-air software update highlights the firm's transition from a manufacturer towards being a service provider simultaneously (King, 2019). This business model approach is very similar to the smartphone industry, where the leading players like Apple provide in parallel to their hardware also the exclusive software for their products (The Future Factory, 2016). The separation of the software and hardware of the car contributes to the emergence of Tesla's digital ecosystem, which is also referred to as the connected car. The digital ecosystem aims to increase the customer experience and integrate products with services and operational capabilities. Tesla's electric vehicles enable data collection and provide the possibility to use these for analyzing customer behaviors. As a result, car owners and passengers will be able to benefit from individualized offerings in the future, which leads to a better driving experience. Tesla's data availability comprises a competitive advantage, because other industry players will have to rely on technology firms like Google or Microsoft to provide the required data insights (Fox, 2020). In view of the digital ecosystem, Tesla also employs an open-source model, which enables third parties to build upon Tesla's products, and thereby optimize the vehicle and service performance. Tesla believes that with this model, they can attract the best engineers in the world (Fox, 2020; Musk, 2014). The digital transformation evolves around the creation of services, which consequently leads to the establishment of a platform business (Financial Press, 2020).

To conclude, Tesla has pioneered as the first all-electric vehicle provider with a strong focus on technology in order to deliver the best driving experience to their customers. The hybrid business model solution enables Tesla to separate the hardware and software architecture from each other and allow third parties to co-create value.

6.2.4 Ford Motor Company

Founded by Henry Ford in 1903 (Ford Motor Company, 2019), Ford Motor Company designs, produces, markets and services automotives, including commercial cars, SUVs, trucks, luxury cars and electric vehicles. Moreover, the company offers financial services to their customers for financing or leasing their vehicles (Menafn, 2019). Ford's headquarter is based in Dearborn (MI) and employs around 199,000 people across the world (Ford Motor Company, 2019). The

early founder, Henry Ford, has always focused on delivering products which make the lives of customers better, therefore, Ford strives to continuously put the customer at the heart of its business (Ziegler & Patel, 2016). In order to do so, the company has based its recent strategy on three global trends (Vitale & Corwin, 2016):

1. Megacities are growing rapidly: More and more people are moving to the big cities and fewer are living in rural regions which causes congestion in the cities.
2. Middle layer of social hierarchy is growing bigger: By 2030, the middle class is expected to grow twice its current size, which means from 2 billion to 4 billion. This will lead to greater pollution of air, congestion and other rudimentary health hazards.
3. Consumers' mindsets are evolving constantly: Technology has changed the lives of people fundamentally. People want to be able to consume products and services in a flexible manner and remain connected as much as possible. Moreover, the Generation Z has shifted from traditional expectations of mobility, this means they demand more flexible access to mobility instead of actually owning a car.

With the development of these trends, Ford Motor Company has decided to shift their business from an entirely product-focused business towards a business that combines the product with mobility solutions (Vitale & Corwin, 2016). Thereby, the company is disrupting itself and putting the focus on the customer experience and not product performance (Ziegler & Patel, 2016). The former CEO, James Hackett, emphasizes this repositioning with the following statement: "We see ourselves not just as a provider of mobile solutions, but also as an orchestrator of digital connections." (Gardner, 2018). Ford has already made progress, in July 2020, the company has reported to have produced already 100,000 connected vehicles in Europe and expects to reach the million within the next three years. The connected vehicles provide the opportunity to keep the car up to date through regular over-the-air software updates. The goal is not only to improve the vehicle quality, but also create cost-savings for the customer through fewer visits to dealerships (Hennen, 2020).

The growing importance of forward-looking projects like autonomous driving, connectivity and mobility, has lead Ford Motor Company to establish its subsidiary *Ford Smart Mobility LLC* (Punt, 2016). The main idea behind this is that it should enable such emerging opportunities, and that these opportunities can strengthen the position of the main business as well. In other words, the mobility services will be used to monetize the usage of Ford vehicles (Vitale & Corwin, 2016). Thus, the goal is to design, develop and invest in smart mobility services (Punt, 2016). In order to strengthen their position and capabilities in the technology and mobility sector, the subsidiary has acquired two smart start-up companies in 2018, namely TransLoc and Autonomic. TransLoc is specialized in the development of apps specifically for the public transportation systems, whereas Autonomic is involved in the connectivity of the car platform which is also referred to as the "Transportation Mobility Cloud" (Automotive World, 2018). Certainly, the acquisition of smart companies is not the only path to a successful digital transformation. Thus, Ford Smart Mobility LLC is managed by a group known for innovative and visionary leaders to facilitate the transition to a global business design (Menafn, 2019). One of the first initiatives by the subsidiary was trialed with the Chariot start-up. The service was designed specifically for commuters but had the potential to transform into a service for everyone in their daily life. The customer experience offered services like pre-booking seats, Wi-Fi, app tracking and more. With this concept, Ford attempted to improve the experience from regular public transport, the experience should be fully owned by Ford from the vehicle to software over to the drivers (Leggett, 2018). However, in 2019 it has been announced that the Chariot service will be terminated, which has mainly been caused by the low number of rider ships (Korosec, 2019). This highlights the competitiveness of the mobility sector and its challenges to provide a valuable customer experience.

To conclude, Ford Motor Company has identified trends driving the automotive industry, which are city congestion, environmental awareness and connectivity. As a response, they start manufacturing connected vehicles and founded a subsidiary to strengthen their position in the mobility sector. With a combination of acquired and self-developed knowledge, Ford is working on a cloud solution to improve the customer experience.

6.2.5 Evaluation of Competitive Landscape

After reviewing the big players in the competitive landscape, different strategies can be observed. Daimler AG and BMW, both aim to gain platform capabilities from strategic partnerships with each other, but also with technology companies. They focus on the industry standard, uniting to fight the big tech players by first learning from them. On the contrary, Ford rather relies on the acquisition of firms to gain the necessary capabilities and Tesla invests heavily in the ownership of the whole ecosystem instead of uniting with other parties. Ford and Tesla can be viewed as making a Counter-Attack against the tech giants. However, all automotive manufacturers aim to create their own car software to bind customers to their cars but at the same time connect them during the car journey with services provided by outside parties like entertainment, smartphone connections, payments and services from dealerships.

Table 5 summarizes the main elements in terms of the current status in electric vehicle technology, the strategy and platform openness of the previously discussed competitors from the automotive industry.



Competitor	Electric Vehicles	Software Development	Software Capabilities	Strategic Alliances	Platform Openness
	Hybrids only	MB.OS (Launch in 2024)	Partnerships	Microsoft	Limited
	Three Fully-electric	Operating System 7	Partnerships	Alibaba	Open
	All Fully-electric	Software Version 10.0	Existing	No	Open
	One Fully-electric	In Development	Acquisitions	No	Limited

Table 5. Snapshot of Competitors from the Automotive Industry

6.3 Corporate Strategy of Volkswagen AG

After the emission scandal, VW realigned its strategy. Thereby, the automotive firm announced their new corporate mission which applies to all brands within the Group, namely “goTOzero”. This stands for the ambition to transform all operations ranging from development over production to supply chain, so that each operation becomes as low in CO₂-emissions as possible (Volkswagen AG, 2019a). To showcase how serious VW is taking the responsibility towards the climate change, they have officially committed to the Paris Climate Agreement, which aims to make vehicles entirely emission free by 2050. In addition, VW aims to become the leader in electric mobility by 2025 and provide customers with the most innovative mobility solutions in the market. Thus, the vision is “Shaping mobility – for generations to come.” (Volkswagen Group, 2019). Innovative mobility solutions include technologies, which allow customers to connect their everyday life with their cars. Vehicles should always be up to date, improve the

driving experience and meet mobility demands (Stackmann, Jost, & Hartung, 2018). The corporate values serve as the foundation of the strategy and are therefore of crucial importance. The values are under the umbrella of “Together4Integrity”. It underlines the importance of integrity and compliance across all VW Group brands. This applies to all activities within the corporation and is said to be the core to success. Moreover, VW differentiates between five key activities which are of essential nature for the firm, which are (Volkswagen Group, 2019):

1. Best Governance: tackles the weaknesses in the Group structure, enhances the decentralization of decisions and involves a stronger focus on stakeholder interests.
2. Best Performance: aims to become economically stronger, not only short-term, but also long-term. The measure of indication is a Return on Sales (ROS) of 7-8% by 2025.
3. Best Brand Equity: deals with the alignment of the Group brand portfolio in order to avoid conflicts of interests among the Group.
4. Software-Enabled Car Company: targets to create a software competence, so that VW can transform its core business into a software product.
5. Excellent Leadership: tackles the management and organization restructuring, which means VW wishes to employ a leadership team that is future-oriented and open to new trends.

Figure 8 emphasizes the importance of the values and integrity for the reach of the corporate vision, namely to shape mobility for new generations.



Figure 8. Volkswagen Strategy. Reprinted from Volkswagen Group (2019)

As mentioned, VW aims to tackle today’s and future challenges. Mobility should become more sustainable and accessible to everyone. In the Transform 2025+ Strategy, VW outlines the plan of actions for achieving the corporate goals. So far, this has been the greatest strategic transformation in the history of VW (Stackmann et al., 2018), because the company focusses mainly on two aspects which used to be atypical for the traditional automotive industry, namely (1) electrification and (2) digitalization (RTTNews, 2020; Stackmann et al., 2018). VW assures that these two aspects will have positive effects on the automotive industry in several ways, which are cleaner air, quieter sound, safer car journeys and smarter vehicles (Volkswagen Group, 2019). The ambition is that by 2025, 1.5 million electric vehicles are sold per year (RTTNews, 2020).

However, VW is aware of the fact that in order to operate in the electrification and digitalization fields, it has to strengthen its competences. On the one hand, VW acquires these competences through intensive investments in R&D in order to own them and have the ability

to deploy them long-term. On the other hand, VW strengthens its position through strategic alliances with the goal to broaden VW's global innovation ecosystem, but also to take advantage of the competences of external parties. For instance, Microsoft is one of VW's strategic partners to support its transformation from an automotive manufacturer towards a service provider for mobility (Volkswagen Group, 2019). The Volkswagen Group reports to increase its R&D and Capital Expenditures (CAPEX) from 30% to 40% which marks an increase by twice its current amount (approx. 27 billion €). Another 35 billion € will be invested in the R&D of batteries for electric vehicles and the charging infrastructure. The stronger the battery technology, the longer will be the range of the electric vehicle. For customers, this is a crucial purchasing argument (Mommsen & Oemisch, 2020; Volkswagen Group, 2019). Compared to other automotive manufacturers, VW has the greatest budget for electrification, closely followed by Daimler (Taylor & Schwartz, 2019). In order to compensate for the increase in R&D and CAPEX, VW has announced to endeavor a reduction of costs through developing more efficient production processes, but also increase economies of scale (Oldenbuettel, 2015). This involves leveraging synergies between Group brands. The relatively large brand portfolio allows the Volkswagen Group to share key technologies with one another. Moreover, the increasing exchange between the groups will facilitate the centralization of the Group activities and thereby reduce the corporate complexity (Volkswagen Group, 2019).

6.3.1 Electrification

VW is known for its high flexibility in vehicle architecture. The latest vehicle platform development for combustion engines is the Modular Transverse Toolkit (MQB) which has been used in over 100 million Group vehicles, ranging from small to large vehicles (Irish Tech News, 2019; Volkswagen Group, 2019). The high flexibility of the MQB has allowed for instance the VW Golf to be offered in several different types of powertrains like petrol, diesel, hybrid CNG and electric. To support VW's mission and vision, the high expertise in modular platforms is conveyed to the electric market. Thus, VW has developed its first Modular Electric Toolkit (MEB). In the beginning, the MEB should only perform as an addition to the MQB which means that VW operates two product lines simultaneously, combustion engine and electric vehicles (Volkswagen AG, n.d.). Therefore, according to News Bites (2020), VW has devoted the production plant in Zwickau, Germany fully to e-mobility, starting from 2020. VW vehicles are branded as "people's car", therefore, VW ensures that the MEB can be utilized for mass production (Schaal, 2019; Taylor & Schwartz, 2019). However, one of the challenges to create electric vehicles for the mass is the fact that batteries are the highest expense (30-50%) of the production. To exemplify, the costs of a battery achieving a range of 500 km costs around \$20,000 and an additional \$2,000 for the electric motor. In comparison, the costs for a combustion engine amounts only \$5,000 (Taylor & Schwartz, 2019). As stated by Schaal (2019), the first fully electric VW vehicle for the mass, called ID.3, started production in 2019 and made its debut in 2020. It is considered the pioneer in e-mobility and has a market price of less than €30,000 (Volkswagen AG, 2020a).

Thus, achieving economies of scale is the highest priority in order to make the electric vehicles affordable and at the same time generate appropriate revenues. To realize this, VW has decided to open its electric platform to external parties (Irish Tech News, 2019; Volkswagen Group, 2019). This means that third parties, including competitors, will be allowed to use the MEB which should not only lead to substantial savings, but also to the establishment of the MEB as an industry standard (Schaal, 2019). The first official partner is a German-based start-up called e.Go who is well-known for its expertise in e-mobility. The start-up has agile teams who are strongly customer focused. Therefore, the adoption of the MEB

platform by e.Go is for both companies seen as a win-win situation. VW can spread their technology, while e.Go will be able to operate faster and more cost-efficient (Volkswagen AG, 2019b). Besides, VW has reported that one of their industry competitors, namely Ford, has made first suggestions to use the MEB as well (Schaal, 2019; Volkswagen Group, 2019). This will strengthen VW's competitiveness and facilitate their aim to become an industry standard. The risks associated with opening the MEB to third parties should not be disregarded. Possible risks include claims by third parties about the procurement, quality or production of the MEB. Moreover, VW exposes themselves also to reputational risk (Volkswagen Group, 2019).

To conclude, with the MEB, VW has officially committed to a new era of automotive, namely electric vehicles. Therefore, VW has opened its MEB to third parties to generate economies of scale and establish the electric platform as an industry standard. The first partnership has been sealed and more are expected to come.

6.3.2 Digitalization

The electrification of mobility has opened gates for new technologies. In the automotive industry the goal is to create the connected car, which should provide a similar user experience as with the smartphone and be able to communicate with other end-user devices like tablets, smartphones and laptops (Hetzner & Vellequette, 2018). Almost all automotive manufacturers are operationalizing this goal, however, in comparison to others, VW is dedicating more of its resources to it. The highest priority for VW is to separate the hardware and software from each other (ITU News, 2020). According to Hetzner and Vellequette (2018), the hardware architecture refers to the electrification of vehicles, whereas the software architecture deals with the development of an operating system for the electric vehicle. The operating system should allow for over-the-air updates and improve the car's performance without having to buy a new one. VW aims to develop the car software inhouse, even though licensing appears to be a much easier solution. However, VW strongly emphasizes to develop the software competences themselves in order to be able to preserve VW's future viability. The current state is that compared to other automotive manufacturers like Tesla, VW has not yet centralized all computer systems inside the car (Ramsey, 2018). Stackmann et al. (2018) state that the so-called vw.os should concentrate the vehicle intelligence and create the central brain of the vehicle. As mentioned, this is similar to the smartphone business and has proven to be highly profitable. The reason can be illustrated through Apple, the products provide a better user experience and builds switching barriers for customers since Apple products operate on their own internal operating system iOS (Ramsey, 2018).

The vw.os is developed by a new established organization, the Car.Software-Organization (Car.Software Org). On 1st of January 2020, Car.Software Org started their operations with 3,000 employees as part of the VW Group. They are responsible for all software activities across the Group in order to establish a cross-brand activity field for mobility solutions (Volkswagen Group, 2019). Moreover, ITU News (2020) report that next to the vw.os, the Car.Software Org has also the responsibility of creating a cloud solution for the VW electric vehicles. The cloud should allow third parties to connect to VW's digital ecosystem ("Volkswagen We") and offer their services. This can include entertainment, infotainment and dealer and smart card services (Hetzner & Vellequette, 2018; ITU News, 2020). Moreover, for the use of the cloud, each customer will receive a unique user ID for customer identification, data collection and individualized offerings. This will supplement current revenue streams with new services like invoicing, car sharing and e-business applications (Stackmann et al., 2018). However, in the development of the automotive cloud, VW relies on a cooperation with Microsoft. VW complements the cooperation with its deep

understanding of the automotive industry, whereas Microsoft owns the software knowledge and expertise on how to scale technologies. The challenge will be to align both industries with each other, while not letting Microsoft take over the market (ITU News, 2020). To summarize, VW aims to achieve several benefits from the development of their own car software:

1. **Brand Loyalty:** The customer will be tied stronger to the company due to higher switching costs, consequently the firm has the opportunity to increase customer loyalty (Hetzner & Vellequette, 2018). Moreover, the connected car will offer several software-based features which will create a better user experience (Ramsey, 2018).
2. **Marketing Opportunities:** The digital ecosystem will allow third parties like dealers and entertainment companies to offer their services as well. This will provide the opportunity to create new revenue streams, while third parties can benefit from VW's ecosystem (Hetzner & Vellequette, 2018).
3. **One Digital Platform:** The car software will connect all mobility services from all Group brands into a unified system. Thereby, VW can leverage synergies and achieve economies of scale (Stackmann et al., 2018; Volkswagen Group, 2019).

To conclude, the strategy of VW is to create one digital platform which will connect the customers to their personal vehicle. Figure 9 illustrates that within the cloud, hardware and software are separated. The hardware platform enables regular over-the-air updates to continuously improve the vehicle performance and the software platform complements this with the Volkswagen We ecosystem, which provides various service offerings to the customer. Besides offering VW mobility solutions and service offerings, third parties can join the platform and offer their own services as well.

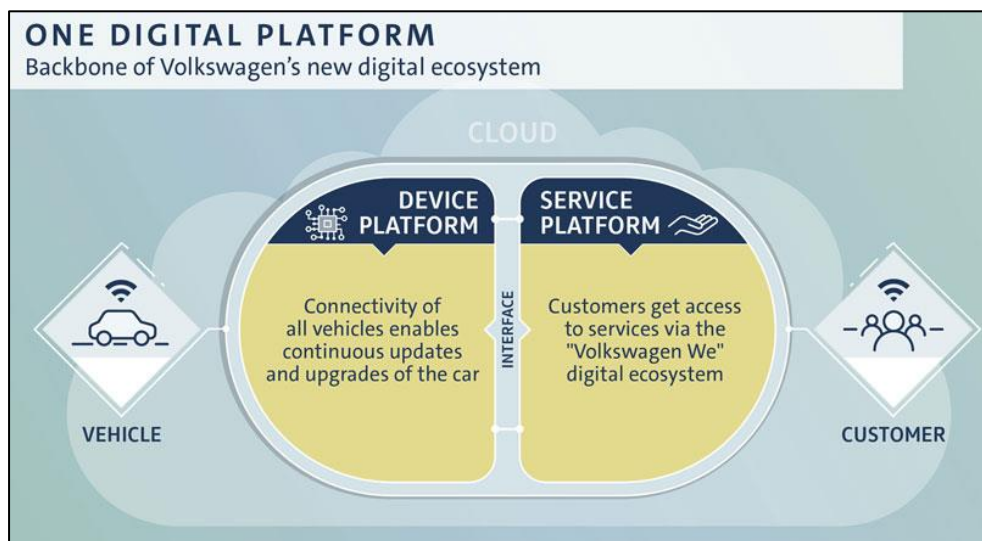


Figure 9. One Digital Platform: Volkswagen's Ecosystem. Reprinted from Volkswagen AG (2018a)

6.4 Business Model Canvas

The traditional automotive business models are being disrupted by new emerging technologies. In order to remain competitive, it is of crucial importance to constantly innovate the business model with a future perspective in mind. In the case of VW, the traditional business model has already evolved into the direction of becoming a platform business. However, VW largely maintains its core business, namely the production and sale of combustion engine vehicles, but

has supplemented its operations with activities which are common for platform business models. The business model will be analyzed using the business model canvas by Osterwalder and Pigneur (2010). Several business model innovations can be observed which will be tackled separately.

1. **Customer Segments:** VW stands for the “people’s car”. The vehicles are produced in a cost-efficient manner, so that the average people are able to afford them (Volkswagen Group, 2019). Therefore, VW mainly targets the mass market. This should not only be applicable to the traditional combustion engine cars, but also to the electric vehicles. VW aims to make the, currently still relatively expensive, electric vehicle affordable. With this approach, the company wants to fulfil the customer demands for greener mobility solutions while still offering affordable prices (Winton, 2020). However, the diversified brand portfolio allows the company to target another customer group as well, namely the luxury market. With its high-class brands like Lamborghini, Audi, Porsche, Bentley and Bugatti, VW targets high-earning customers who are interested in sporty and luxurious cars (Volkswagen Group, 2019).

To conclude, VW targets mainly customers in the mass and luxury market.

2. **Value Proposition:** Over the years, VW has built a strong brand image. The vehicles are easily recognizable and represent high performance. Especially, its historical background differentiates the company from other automotive manufacturers (Volkswagen AG, 2015). Although the emission scandal poses a setback for VW’s brand image, the internal restructuring and commitment towards electric mobility has compensated for this partially (Glinton, 2018). Moreover, its broad brand portfolio and operations around the world lead to a global presence and enhance the innovation at the company. New trends and technologies are shared across the brand which ensure that customers receive the most up-to-date vehicles in the market (Volkswagen Group, 2019). Also, in terms of the quality performance, VW can benefit from its German heritage. German owned businesses have a well-known reputation for its engineering expertise which guarantees safe and high-performance vehicles (Voigt, 2020). Not only does VW offer high performance and safety vehicles, but also at affordable prices. Through the strong value chain, VW enabled a modular approach, which allows for flexibility and cost-efficiency during production (Volkswagen Group, 2019). The value proposition is transferred to the electric market as well, VW launched its first fully electric vehicle, the ID.3, which markets at a price below 30,000 €. Here, VW aims to develop a cost leadership in the electric market, because up to the present electric vehicles were far from affordable to the mass. One criterion, that has kept many customers from buying a sustainable, electric vehicle (Volkswagen AG, 2020a).

To conclude, the value proposition of VW consists of its strong brand image, global presence and quality and innovation products. Moreover, increasing value is offered through the ID.3 which provides high performance at a lower price than competitors.

3. **Channels:** In order to market the VW vehicles, VW strongly relies on dealerships. The reason is that VW aims to provide customers a great sales experience with a contact point for service requests. Moreover, VW has several showrooms where they present new VW vehicles. It is very common for automotive manufacturer to sell their vehicles through dealerships and showrooms, especially in consideration of the traditional automotive business model (Volkswagen AG, 2018b). However, based on the corporate strategy Transform 2025+, VW aims to establish a hybrid dealer approach in order to

gain direct contact to their customers. This should especially be applicable to new electric vehicles. A combination of online and offline sales will be established, where the customer has the choice to select from either buying the car online or at a dealer shop (Volkswagen AG, 2020b). During the online sales transaction, the customer has to select a preferred dealer for possible service request. This way, VW ensures that dealers remain involved in the car sales, while still establishing a direct relationship to customers (Miller & Campbell, 2020). According to Lee (2020), the approach is inspired by Tesla's sales models, who only sells cars through direct channels to enable a direct relationship with their customers and avoid price negotiations between dealers and customers. This means that online sales for the VW ID.3 are available, whereby VW is in charge of defining the vehicle price.

To conclude, the channels at VW are still dominated by indirect sales points like dealerships and showrooms. However, with the hybrid sales model, VW has introduced their first direct online sales to customers. In order to ensure that dealers are still involved, customers have to choose a preferred dealer.

4. **Customer Relationships:** The traditional business model of VW focusses on maintaining customer relationships through dealerships. Dealers are responsible to provide a qualitative after-sales service to customers. Hereby, VW puts a large amount of trust in the ability of dealers to satisfy customer needs in every aspect. Dealers are supported by VW through offering supply to each of the dealerships from the global sales network including more than 130 VW warehouses (Volkswagen Group, 2018). In line with the addition of direct sales channels, VW attempts to establish direct customer relationships through the digitalization of the vehicles. Over-the-air software updates and service offerings will allow VW to provide personalized mobility services and solutions to customers. This will facilitate a closer relationship, provide higher brand loyalty and reduce the administrative time involved in services through dealers (Lee, 2020).

In summary, VW provides personal assistance through dealerships who are supported through VW's network for supplies. In addition, VW is aiming to build direct relationships to customers through digital solutions.

5. **Revenue Streams:** The core revenue stream of VW still involves the traditional vehicle sales. This means, VW generates profits from three sources: (1) selling vehicles and spare parts; (2) offering upgrades and accessories; and (3) providing financial services to customers either asset-based which includes crediting or leasing, service-based like insurance, or both (Deloitte, 2019; Wirtz, 2020). Moreover, VW is already offering flexible mobility solutions to customers who request mobility on demand (Volkswagen Group, 2019). However, this does not contemplate VW's full potential. In consideration of VW's strategy to shift the core business towards electric vehicles, the revenue streams will change along with it. The electrification and digitalization will offer new streams for revenue. The vehicle will transform into a platform which allows for revenue streams like fees for platform access, data-as-a-service and services sales (Deloitte, 2019). VW has already created the ecosystem Volkswagen We which allows for these revenue streams, however, they cannot be considered significant since they have not reached an appropriate level of profitability. These services are still in the test phase, so no large revenues can be expected. However, they still tackled in this building block, because of the future potential.

To conclude, VW generates revenue largely from its vehicle sales, upgrades and financial services. Service-related revenue streams have been launched within the Volkswagen We ecosystem as part of the digital transformation.

6. **Key Resources:** One factor for the VW success lies within the resource ownership of VW. The company has over 120 production plants, a strong distribution network and a diversified brand portfolio (Magadia et al., 2019). The brands offer opportunities for leveraging synergies, thereby creating a greater efficiency. Moreover, VW employs a workforce of around 671,200 people. The employees are highly valued, because they are the backbone of the firm. They develop, manufacture, innovate and market VW products and contribute significantly to the success of the company. Also, VW has the financial resources to offer financing services to customers, but also facilitate R&D activities and hereby innovate their products. In addition, VW has the competitive advantage of having a strong expertise in the modular toolkit development (Volkswagen Group, 2019). The newly established Car.Software Org is centered around the development of software capabilities. The company has made its debut in the beginning of 2020, therefore, it counts as a resource of VW, but it cannot be evaluated how well the firm has established the software competences yet.

In brief, VW owns on the one hand physical resources like production plants and strong distribution networks, but also human and intellectual resources like highly qualified personnel, a strong brand and the modular toolkit technology. Moreover, VW owns financial resources to provide services and make investments. In future, VW expects that software expertise will belong to its key resources as well.

7. **Key Activities:** VW is an automotive manufacturer. Therefore, the main activities include the development of vehicles and engines and the production and sale of vehicles. However, due to the increasing trend for sustainability, VW is dedicating a greater number of activities towards developing and innovating electric vehicles. In addition, to the activities from the Automotive division, VW performs financial services like dealer/customer financing, leasing and insurance. Moreover, next to the rather traditional activities, VW has broadened its activities with mobility offerings and software development. VW has a strong strategic focus on the development of its own car software, vw.os, therefore Car.Software Org. This is a significant change compared to past activities of traditional automotive manufacturers in general (Volkswagen Group, 2019).

To conclude, the main activities of VW include development and production activities. However, due to the increasing platform trend, VW is dedicating more of its resources towards the development of software.

8. **Key Partnerships:** The traditional automotive manufacturers, and also VW, rely to a great extent on their partners. Especially in the sale of the vehicles, VW depends on the partnership with their distribution network and dealers. The distribution network is of crucial importance to ensure that production plants are set with the necessary materials and dealers receive the vehicles for realizing sales and the supplies to offer after-sales services. The long-standing history of VW has achieved a high-quality distribution network across the globe and in the current state, dealers allow for the access to customers, so both partners are of central importance to VW. Moreover, the Group brands and subsidiaries are key partners of VW. They work together to share technologies, reduce costs and boost innovation. In other words, the brands and subsidiaries complement each other in order to remain competitive (Volkswagen

Group, 2019). Not only is VW exploiting the capabilities of its brands and subsidiaries, but also seeking for complements within technology firms. VW believes that strategic alliances with firms like Microsoft are essential to the transformation into a software company. According to ITU News (2020), the aim is to learn from each other, rather than competing with each other. Also, investors and shareholders are fundamental to VW, because these are the ones who are investing their financial resources into the firm. They are highly prioritized and involved in the future of the firm (Volkswagen Group, 2019).

In brief, key partners of VW include dealers and distributors who enable the distribution and sale of the vehicles, Group brands and subsidiaries who facilitate innovation and create economies of scale, strategic alliances with technology partners to adopt new capabilities and investors and shareholders who provide financial resources.

9. **Cost Structure:** The costs at VW are mainly driven by the production of the vehicles. As an automotive manufacturer, typical costs include raw materials, production, personnel and maintenance, which is also applicable to VW (Volkswagen Group, 2019). The costs are partly variable, because some costs depend on the level of production like raw materials. Other costs like maintenance are fixed and occur irrespective of the vehicle production. However, the broad brand portfolio and size of the company allows for economies of scale. An example is the MQB platform, which is used by all brands for production (Irish Tech News, 2019). Thereby, production processes can be standardized across the brands which reduces costs. This shows that VW is aiming for a cost-driven business model. The reason can be traced back to the company's aim to be a "people's car" (except for the luxury brands) (Volkswagen Group, 2019). Moreover, in light of the digital transformation of VW, increased its investments in R&D significantly in order to develop new software capabilities, create a digital platform and improve performances of the electric vehicle like optimizing the battery and improving the charging infrastructure (Mommensen & Oemisch, 2020; Volkswagen Group, 2019).

To summarize, the costs at VW are still driven by the manufacturing of the combustion engine vehicles. However, VW largely invests into the development of electric vehicle technologies and software capabilities.

6.5 Business Model Innovation

As pictured in Figure 10, the business model of VW is driven by the emerging trends for electric vehicles and digital services. VW does not follow a traditional automotive business model anymore which is reflected in its incorporated business model innovations. The business model innovations are common traits of multi-sided business platform, confirming the assumption that VW is transforming into a hybrid business model solution.

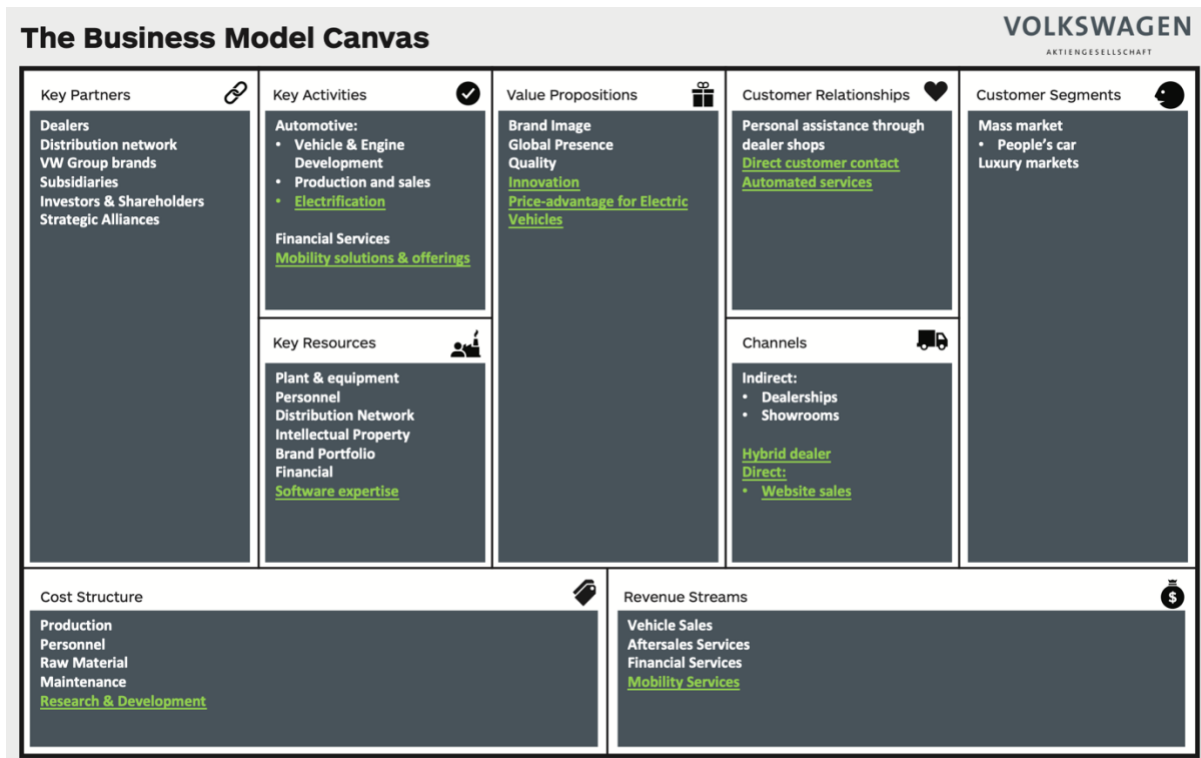


Figure 10. Volkswagen AG's Business Model Canvas (self-created figure, green elements represent Business Model Innovations)

The most obvious innovation within the VW business model is the development of the electric vehicle. The demand for sustainable mobility led to offering flexible car sharing solutions and significant investments into the development of an affordable electric vehicle to create a “greener” future. In the shift towards sustainable mobility, VW’s expertise in vehicle platform development is an advantage to the firm. Following the MQB platform, the Volkswagen Group has developed the MEB platform to allow for affordable electric vehicles which can convince in quality and performance. The electric vehicle has opened many new directions for VW since the hardware structure is a lot simpler than for regular combustion engine vehicles. In addition, the electric vehicle allows a better integration of software applications. Especially in terms of upcoming trends like autonomous driving, it forms a focal point in the automotive industry. The impact on the business model of VW is reflected in the:

- Cost Structure which increases significantly through higher R&D investments.
- Key Activities which now include the development of electric vehicles next to its combustion engine vehicles and also the offering of mobility solutions and services.
- Value Proposition which is enriched with more innovative solutions like the connected car and the affordable price of electric vehicles.
- Revenue Streams which enhance with new mobility services that VW is offering to its customers.

As stated by Gawer and Cusumano (2014), a platform owner acts as an intermediary between two sides. Up to the present, the dealer was the one who sold the cars directly to the customers, thus, VW only limited contact to its end-customers. However, with the increasing trend for digital solutions, VW has innovated the business model with offering direct customer contacts. Customers are able to purchase electric vehicles online which enables VW to build a closer and more personal connection to customers by collecting more detailed customer data. This has especially an impact on Customer Relationships and Channels.

In consideration of VW’s aim to offer increasing digital services to its customers, VW has established the Car.Software Org. VW is aware of the fact that they are experts in the

development and production of vehicles, but they are lacking the software expertise to develop digital services which can compete with current offerings from technology firms. Therefore, the investment in a new subsidiary and the associated development of software skills is essential to the future success of VW. Moreover, VW has partnered up with Microsoft in order to learn from one of the big technology firms directly. The relationship is based on mutual support. VW offers expertise in development and production of vehicle, whereas Microsoft offers the software know-how. VW has accounted for this in the Key Resources, but also in the building block for Key Partners.

6.6 Evaluation of the Hybrid Business Model Adoption

6.6.1 Assessment based on Transformation Guidelines

The business model of VW will be assessed based on the guidelines proposed by Markfort et al. (2019) for transforming from an incumbent into a hybrid business. Hereby, it will be evaluated whether VW has taken all relevant aspects into account for the transformation and how well they are reflected in the current business model.

1. Analyze the core business.

The automotive manufacturer VW shows that it is aware of its most important revenue stream, namely the development and production of vehicles. However, with regards to the climate changes and evolving customer demands, the company is applying its expertise on to the electric market. The company is dedicating more of its resources to electric vehicles like the MEB platform. In the future, mobility is expected to be fully sustainable, therefore, VW is adopting to this trend with a stronger focus on the development and production of electric vehicles.

VW has successfully identified its core business and also current trends that will have an impact on it. The automotive manufacturer is expanding its product range with electrified cars, thereby VW can maintain its current revenue streams while increasing the product variety.

2. Ideate products/services that serve the core business.

Similar to the business model of Apple, VW is attempting to offer not only hardware products, but also the matching software. The electric vehicle allows to separate the hardware from the software to offer frequent over-the-air updates and services. The electric vehicle will be fully connected to the customer's personal end-devices and offer a greater driving experience. Also, the goal is to open the ecosystem to third parties, so that external parties are able to offer their applications through the vehicle as well. This will increase the ecosystem and lead to a greater value for customers and application providers since they can reach users through the VW ecosystem. New services for vehicle owner will include, among others, infotainment, entertainment and payment services. This means that the possibilities for vehicle use are expanding into various directions, making the vehicle a focal aspect within the customer's life.

The separation of hardware and software will allow over-the-air software updates and more diverse service offerings. With the launch of the ID.3, VW started to offer its own car software which is also reflected in the current business model. However, while VW is still in the development phase of electric vehicles, not many third parties have entered the ecosystem, so technology firms do not belong to VW's key partners yet. In the future, this will be critical for the software success.

3. Evaluate the possibilities for monetization.

In terms of monetization, VW has the opportunity to make software updates of the electric vehicle chargeable. At present, if customers want a better quality or performance of their cars, they have to buy a completely new vehicle. However, with over-the-air software updates the electric vehicle will be provided with the most recent technologies, thus, making a software update monetization justifiable. On the other hand, VW has the possibility to generate revenues from external parties who would like to offer their services within the ecosystem. For customers, these offerings will be free of charge, however, the external providers will be monetized for the access to the platform. Thereby, VW can generate not only revenue from offering their own services, but also from letting third parties offer their service on the platform.

The possibilities for monetization are not reflected in the business model of VW. The sale of the ID.3 comes already with an integrated software, therefore, VW cannot expect revenue for updates. However, the sales of the electric vehicle are profitable revenue streams. Moreover, VW is also not charging third parties for service offerings. The reason might be that VW just recently launched its first fully electric vehicle and is currently more focused on the vehicle performance which serves as the foundation for the ecosystem and customers adopting to the new electric car. Therefore, no large ecosystem to provide potential revenue has been established.

4. Do not play an All-in-Game.

The transformation of VW into a platform business is happening relatively slow. VW is maintaining its regular operations for combustion engine vehicles. Since this is VW's main revenue stream and the company is investing largely in R&D of electrification and digitalization activities, they cannot afford to replace the pipeline business model completely. However, this is also a recommended approach to follow. With regards to that, only one plant has officially been dedicated to the electric vehicles. In addition, the Car.Software Org operates as an independent organization in order to develop the vw.os operating system and offer digital services.

VW is not playing an All-in-Game, but rather slowly adopting multi-sided platform practices. The new focus on electrification and digitalization are complementing the business model and not replacing any of the main business activities. The current business model of VW is accounting for these complements.

5. Think global, act local.

In terms of the launch of the ID.3, VW's first fully electric vehicle, the company aims to limit the sale to Europe only. The reason is that the demand and usage in Europe is currently bigger than in other locations. As an example, in the US, cars are frequently used for long-distance journeys since the country is of such a big size, therefore, launching a vehicle that can only reach a journey range of around 300 km and has not been tested in the market heavily, is not an optimal offering. So, VW has launched the ID.3 with its own car software only in Europe as a pilot (Lambert, 2019). However, this does not only affect VW but imposes a controversial topic for all automotive manufacturers. One advantage of VW is its strong global presence and broad brand portfolio. If the ID.3 proves to be successful, VW can improve and apply the technology faster to other Group brands and thereby enhance its internationalization process and target a greater customer group.

The business model canvas of VW does not reflect this aspect. However, based on the ID.3 sales strategy of VW, it can be concluded that VW is following this guideline with the limited launch in Europe. VW is applying a sequencing strategy in order to identify how the market will react and how well the ID.3 is positioned in the electric market.

6. First come, first serve.

From a competitive landscape perspective, other strong players are already involved in the electric market and have established similar approaches. For instance, Tesla, the pioneer in electric vehicles, owns already software competences and develops high-performing cars. Also, Daimler is investing in the digital transformation and aiming to replace the traditional business model with a hybrid approach. Therefore, VW has to act agile and future oriented. The increasing R&D expenses in combination with the plan for electrification and Car.Software Org indicates that VW is approaching the market with a less traditional mindset. The automotive industry used to be rather slow moving, so it will be a challenge for VW to face the fast-moving technology competitors. From a market perspective, the success depends on how well the innovation is accepted by the market. Thus, being the first mover does not guarantee a competitive position if the market is not ready for the product. So, the first mover is exposed to a greater risk than the competitive firms following the innovation after it has proven to be accepted by the market.

To conclude, although Tesla is the pioneer in electrification and digitalization of the vehicle, the company has not yet taken over the market since other players have followed this strategy as well. In addition, the success of the firm largely depends on the innovation acceptance by the market.

Theoretical Implications

The six steps by Markfort et al. (2019) serve as a theoretical guideline and are not the only path towards a successful transition to a hybrid business model. The guidelines have been evaluated based on VW's current business model in order to test their applicability. As shown in Table 6, it can be concluded that even though not all guidelines were confirmed, VW is on its way to a hybrid business.

Literature Finding	Implication	Research Finding
1. Analyze the core business	Confirmed	It is essential to know the core business for a better understanding of own capabilities and directions for innovations.
2. Ideate products/services that serve the core business	Confirmed	Innovating upon existing products might offer advantages over competitors through existing knowledge of the market and customers.
3. Evaluate the possibilities for monetization	Rejected	While monetization is important in the long run, it is secondary in the early adoption phase. Value needs to be created first before platform usage should be charged.
4. Do not play an All-in-Game	Confirmed	Slow adoption of platform activities to ensure availability of financial resources and adoption of required capabilities.
5. Think global, act local	Confirmed	Testing the innovation locally helps to identify weaknesses and improve the quality of the innovation.
6. First come, first serve	Rejected	Being a first mover does not guarantee a competitive position. It rather depends on how well competitors are prepared to new market changes and whether the market accepts these.

Table 6. Theoretical Implications of Transformation Guidelines by Markfort et al. (2019)

New Findings

VW has identified its core business and trends which will impact the business in the future. With this knowledge, VW was able to develop the ID.3 and offer their own car software. However, one of the challenges that VW is facing is that in order to create an ecosystem that is large enough to attract external providers, VW has to make customers switch from the combustion engine vehicle to the electric vehicle. This means that they have to invest largely in the vehicle technology like the battery capacity and charging infrastructure. This decelerates VW's transformation into a hybrid currently, because they cannot only focus on the platform development, but have to create a product on which the platform will be served. Only then, the ecosystem will grow and attract external providers to join the platform.

In terms of pricing, VW cannot monetize any of the potential user sides, nor customers or external providers, for the use of the platform. The ecosystem is too small, so that a monetization of the platform use would only deter the users. Currently, in order to create platform success, VW has to renounce a monetization until the platform creates sufficient value. This means, that VW has acted successfully at the present time to not make the platform chargeable. However, for VW this creates a higher cost structure because they have to invest heavily into the creation of platform value for users. Activities such as software development are part of these costs that VW has to bear. On the other hand, VW can generate revenue through the sales of the electric vehicles in order to compensate partially for such costs.

VW is not a first mover within the market, so they do not gain a competitive advantage by being the first one developing a car software for the electric vehicle to serve as a platform. As shown in the competitive landscape, many incumbent firms are approaching the automotive market with the same intention, hence creating an intense and competitive environment. Tesla for instance has already a car software integrated and is the pioneer in electrification of vehicles, however, Tesla has not taken over the market despite being the first mover. Thus, more than ever, VW needs to be agile and fast-moving so that they remain a central player in the industry. The traditional automotive industry which used to be slow-moving will develop into a fast-paced one and an innovative and agile mindset can provide inconceivable benefits.

6.6.2 Assessment based on Shifts of Key Platform Elements

Van Alstyne et al. (2016) states that three elements within the business model of an incumbent have to be adjusted in order to transform successfully into a platform business. These are:

1. From resource control to resource orchestration

As a pipeline business, VW strongly depends on the control of resources. As a hybrid business, VW has to control the resources required for the development and production of vehicles, but also act as an orchestrator in order to establish a network so that users within the ecosystem can interact with each other. The ecosystem should originate from the car software integrated in the electric vehicle. This creates a challenge for VW, because they cannot just simply focus on the orchestration, but also have to build the hardware on which the software will operate. This means that the first priority for VW should be the performance and quality optimization of the electric vehicle in order to make the electric vehicle attractive as an alternative solution to combustion engine vehicles. It is essential to make the customers switch to the electric vehicle because only then the ecosystem will grow and have the opportunity to create network effects. Especially, in the early adoption phase, VW has to convince existing customers, but also attract new customers to buy the electric vehicle. VW has already a strong expertise in the development of vehicles, therefore, the resources and processes applied to the traditional vehicles can be transferred partially to the electric vehicles.

Also, VW is in the early adoption phase of platform practices, therefore they have to establish the capabilities required in order to operate as an orchestrator. In this case, VW has to develop software expertise before they can create a network for interactions between users. Since the ID.3 has just recently launched with the vw.os, it cannot yet be evaluated how well VW has established the software expertise. However, the fact that 3,000 of the employees have been dedicated to the software development indicates promising achievements.

Thus, it can be concluded that an entire switch from resource control to resource orchestration is not possible for VW. The automotive firm has to first optimize the electric vehicle in order to attract users to the platform. In parallel, they have to build software capabilities, so that VW is able to create a network for interactions between customers and third-party suppliers. So, in the future a combination of resource control and resource orchestration appears to be more applicable to the business model of VW, rather than switching entirely.

2. From internal optimization to external interaction

With the software development, VW's long-term goal is to allow external supplier offerings and thereby co-create value. Thus, the company is working intensively on the software architecture. In the beginning, VW has only focused on creating and offering their own services which are integrated in the ID.3. However, the software architecture is built so that it is also compatible with external providers. Only then, it is possible to develop an ecosystem and create interactions between users. In the beginning phase, VW should be decisive with the choice of the external providers, because the quality of the services by third parties will have an impact on the overall quality of the platform.

So, VW is focusing stronger on the external interaction through making the software architecture compatible with external supplier applications. However, in the beginning VW has only focused on integrating its own services into the ecosystem. Once the software has been established successfully, more providers will probably be added to the platform in order to increase the driving experience for the customer and create network effects.

3. From focus on customer value to an ecosystem value

Within the business model of VW, value is still created with the customer in focus since VW still views them as the main revenue stream. The customers will be purchasing the electric vehicles which is the first step within the transition towards a hybrid business. This means VW has to create a hardware that is good enough that customers want to switch to the electric vehicle. At the moment, the difficulty is that the driving range and the charging infrastructure. Thus, customers are harder to convince which consequently leads to a challenge for the ecosystem creation and expansion. However, in order to be ready when the adoption has taken place, VW is already investing a lot of its resources into the development of the software architecture which should be compatible with other suppliers as well. The software is already launched with a sound and direct connection with Android or iOS devices.

To summarize, VW has not made the switch from a customer focus to an ecosystem value. Since the creation of the ecosystem relies on the adoption of electric vehicles, the customers still remain the main focus at VW. However, the ecosystem value is not completely disregarded, in fact in future this will most likely be the primary objective of VW, but it requires a significant amount of time until customers have switched to electric vehicles and the ecosystem has the potential to increase and thereby enabling co-creation of value.

Theoretical Implications

Based on the case of VW it became clear that not all shifts of key platform elements are realizable as a hybrid business. The reason is that a complete focus on business platform activities is not possible since a hybrid business has to maintain its pipeline activities as well. This leads to focusing on different aspects simultaneously. As shown in Table 7, one shift has been rejected, while the other two were confirmed and extended to emphasize the process that has to be undergone to arrive at the shift.

Literature Finding	Implication	Research Finding
From resource control to resources orchestration	Rejected	Hybrid businesses have to control and orchestrate resources in parallel to ensure high quality for hardware and platform products.
From internal optimization to external interaction	Confirmed and extended	Internal optimization is required to increase the platform quality, but external interaction will be essential to the success of hybrids.
From a focus on customer value to a focus on ecosystem value	Confirmed and extended	Customers have to adopt the innovation before participating on the platform, only then an ecosystem has the potential to grow and create value.

Table 7. Theoretical Implications of Shifts of Key Platform Elements by Van Alstyne et al. (2016)

New Findings

The assessment has revealed that the most important aspect for incumbents transforming into hybrids is the optimization of the innovation on which the platform will be served. The reason is that the quality of the hardware will have a strong impact on how existing and potential customers perceive it and consequently determine the acceptance of the platform. Thus, hybrids should focus on product optimization and ensure that the innovation provides a greater value to the customer compared to existing products. If a solid customer base has been established, hybrids can shift their focus from customer value to the ecosystem value. Thereby, the platform will also be more attractive to external suppliers and the ecosystem has a greater potential to grow.

6.7 Benefits and Challenges of Hybrid Business Model Transformation

6.7.1 Advantages of Hybrid Business Models

During the transformation from a pipeline to a hybrid business, incumbents do not only encounter challenges. The case of VW illustrates, that there are also several advantages of being an incumbent before becoming a platform business simultaneously.

Existing Brand Equity

Incumbents aiming to create a platform within their own market can profit from their existing brand equity. According to literature, customers have a greater acceptance for product and/or service extensions if firms have an existing and strong brand equity (Brunello, 2014; Hoeffler & Keller, 2003). The reason for that leads back to the customer's familiarity and trust in the company which has been established through other products within the portfolio. Thus, in the

case of the automotive industry vehicle quality, performance and safety are of crucial importance. Since automotive manufacturers have a long-standing history in the mobility market and most importantly already established a large customer base with global presence, they can make customers switch more easily to the electric vehicle and consequently introduce them to the digital ecosystem in comparison to new market entrants. Moreover, existing customers have a greater trust in the product and are more loyal to it, lowering the risk of customers switching to another provider (Brunello, 2014). In contrast, new established firms or market entrants are more exposed to the challenge of establishing a customer relationship and convincing them of the product quality, performance and safety.

In conclusion, a strong and existing brand equity in the respective market increases the customer acceptance of new products and/or services.

Scalability through Brand Portfolio

Incumbents with a brand portfolio from the same market segment can better scale the business model. According to Morgan and Rego (2009), a greater brand portfolio is associated with lower costs due to economies of scale. Thus, as illustrated in the VW case the ID.3 has been launched as a Volkswagen branded vehicle and if the electric vehicle can convince customers in terms of the vehicle performance and software quality, then VW has the opportunity to easily transfer the technology to the other VW brands leading to synergies. Moreover, with a larger brand portfolio, the number of potential customers for the electric vehicle increases, hence the ecosystem will increase. In comparison, new established firms or market entrants have to approach and acquire new customers which is related to higher costs. In comparison, new established firms usually start with one brand only and new market entrants do not own brands within the market segment. Therefore, incumbents operating in the respective market have an advantage over new established firms and new market entrants.

To summarize, incumbents with a broad brand portfolio from the same market segment enable economies of scale and have a greater potential for generating a vibrant ecosystem.

Prior Market Knowledge and Experience

Incumbents with prior knowledge and experience about the market and customers can achieve an advantage when creating the product on which the platform will be served. As stated by Li and Calantone (1998), market knowledge is positively correlated to the new product advantage. While the software development does not belong to the key competences of automotive manufacturers, vehicle development does. This means that incumbents within the market have the advantage of being experts in the development of the product. Certainly, the software is important as well, but since the electric vehicle will be the product that will attract the customers, incumbents can leverage their existing product knowledge to create high-quality vehicle. In contrast, competitors from different industries do not have any experience in the development of electric vehicle, nor vehicles in general. Hence, they might be exposed to a greater failure risk when creating the product serving the platform.

To summarize, the existing market knowledge and experience creates an advantage when introducing new products to the market.

6.7.2 Challenges during Hybrid Business Model Transformation

The case study of VW has revealed several challenges with which VW was either confronted or is still battling during the transformation into a hybrid business.

Organizational Restructuring

Adopting a new business model requires in the first-place internal changes. In the case of VW, they had the providential situation that they needed an internal restructuring anyhow due to the emission scandal. So, VW achieved two actions in one by escaping the old brand image and creating a new one which is emerging as a hybrid business model.

However, a firm can only realize what employees are capable of and in the automotive industry, employees usually do not own platform competences. So, instead of finding the best engineers, VW had to focus on recruiting not only the best engineers, but also attract the best software developers. This has proven to be especially challenging, because technology firms have entered the market as well, making it more difficult to attract the desired workforce. Moreover, competing against technology firms requires not only software expertise, but also an innovative and fast-moving mindset. Tech firms are known for agility and innovativeness and considering that the automotive industry is relatively slow-moving and traditional in nature, VW also had to account for that and make sure that the leadership has such a mindset.

Software and Hardware Architecture

The connected car will be separated in terms of the hardware and software. This means that the automotive industry first has to develop the product on which the platform will be served. In this case, it is the electric vehicle which allows for this separation. The challenge is to develop an electric vehicle that satisfies customer demands in terms of quality and performance whilst allowing for the emergence of the business platform on top. Electric technology and software development is new territory for the automotive industry. This means that they are confronted with two development challenges at once. Considering that technology companies are experts in the software development and basically only have to create a hardware to the software, composes an even greater challenge for hybrids.

Ecosystem Expansion

Only if customers adopt to the new electric vehicle, firms will be able to create a platform. In the case of VW, the ecosystem was still really small, because the ID.3 has just recently launched. So, to attract different platform users, the hardware must be spread and utilized. In the best scenario, all combustion engine vehicles will be replaced by electric vehicles, but this will require time. Thus, the only way to market the platform hardware is to improve its performance, define an affordable price and emphasize its environmental benefits.

However, the ecosystem does not only expand with the increasing number of customers switching to the electric vehicle, but also with more external suppliers joining the platform. As illustrated in the case example of VW, the platform is still relatively closed and only allowing strictly selected external parties to join the platform since VW wants to remain in control of the platform, especially in the beginning. The consequence is a smaller ecosystem which does not allow for many transactions. So, the challenge is indeed to identify the right level of openness to the platform.

Network Effects

For the success of the platform within the mobility sector, indirect network effects are especially relevant. The reason is that the more users are switching to the electric vehicle, the greater will be the ecosystem and consequently more external providers will be attracted to the platform. If more external providers offer their services, more value is created for the consumers, because they have a greater variety of offerings to choose from. From the perspective of the external providers, value is created through the consumer's use of their services. This will create value co-creation, however, considering the currently small user base for the platform, automotive manufacturers and also technology companies have not been

successful in the exploitation of the potential yet. For instance, VW has just started in 2020 selling its first fully electric and connected vehicle which can reach a range of around 300 km. However, considering the cheaper price and longer range of combustion engine cars, VW has to further develop the electric car to engage more customers on the platform. The challenge will be to make the vehicle attractive in terms of the battery range, charging infrastructure and price.

Pricing Strategy

As mentioned in literature, mostly one side is subsidized for the use of the platform. Since in the case of VW, no monetization from any of the users is achieved, it is assumed that especially in the beginning, the platform should be free of charge. The reason is the small number of platform users. Not many customers have switched to the electric vehicle and have thereby no access to the platform, therefore, charging any of the potential users would only deter new users. This means for the platform owners that they have to make large investments into the maintenance of the platform until an appropriate and potentially profitable user base has been established.

Market Competition

The platform for mobility connects two different industries, namely the automotive and the technology sector. This means that competition is more intense and diverse than before. Especially, the technology firms are a great challenge because they own what automotive manufacturers do not, namely the software expertise. The software expertise is highly valued since electric vehicles can be updated through over-the-air software updates. This will increase the performance and technologies of the vehicle. On the contrary, automotive manufacturers are only experts in the development of combustion engines, so they have to keep pace and appropriate this.

6.7.3 Theoretical Implications

In the following, the theoretical implications of hybrid business model transformation will be addressed. It must be noted, that in literature only challenges were identified, thus, the theoretical implications also only refer to these.

	Literature Finding	Implication	Research Finding
Coring: platform creation	Establishing a platform architecture	Confirmed and extended	Hybrids not only have to establish the platform architecture, but also the hardware architecture on which the platform will be served.
	Creating interfaces for external users	Confirmed and extended	Enabling third parties to join the platform requires the creation of interfaces. For hybrids to accomplish this, they also have to gain the capabilities to realize this.
	Managing external innovations	Confirmed	The level of openness is essential to the platform, because it determines the overall quality of the platform.
	Attracting users to the platform	Confirmed	Hybrids are challenged with the ecosystem expansion and establishment of network effects.

Tipping: platform competition	Sales, marketing, product development and coalition building	Confirmed	Hybrids are challenged with spreading the awareness of the platform and thereby expanding the number of users. Only when enough users join the platform, value is created.
	License intellectual property, preserve partnerships and build strong brand awareness	Rejected	Hybrids are not entering the market as new firms, so, they can profit from existing brand image, their own intellectual property and partnerships.
	Right pricing structure	Confirmed	Finding the right way to monetize platform access is difficult, because if it is done too early, it might deter potential users.

Table 8. Theoretical Implication of Challenges by Gawer and Cusumano (2008)

6.8 Recommended Practices for Hybrid Businesses

Based on the case study research, nine recommended practices can be derived which help pipeline businesses to transform into hybrids. Thereby, the evaluation of the two frameworks by Markfort et al. (2019) and Van Alstyne et al. (2016) have been taken into account while also expanding these.

1) Develop an agile and innovative mindset.

Operating in a fast-changing environment requires the ability to rapidly respond to changes. Especially, in platform environments, market players must have a greater focus on new trends affecting customer demands since platforms bring user groups across industries together which leads to greater complexity. Thus, developing an agile and innovative mindset increases the flexibility and chances for discovering new opportunities in the market.

2) Understand and maintain your core business while reinventing it.

Identifying the core business creates a better understanding of what is valued most by the customers. Also, it is much easier for incumbents to establish a platform which is related to their existing capabilities and value proposition rather than learning and developing entirely new once. So, if incumbents focus on innovating their core business, they have a greater chance of attracting existing and new customers.

3) Let the innovation cannibalize existing products.

Innovating the core business might lead to a cannibalization of existing product ranges. However, while it may appear negative for the business in the beginning, it can create greater value for incumbents, if the innovation proves to be more valuable, in the long run. The value can include not only the product sale, but also service offerings as it is common for platform businesses. Moreover, in case incumbents refuse to cannibalize their own products, they expose themselves to the risk that competitors might take over their customers. Thus, it is justifiable to cannibalize own products as long as the innovation can offer greater value.

4) Control and orchestrate resources.

An incumbent innovating its core business and thereby attempting to operate as a platform business in parallel will still have to develop and produce physical products. Assuming that the incumbent is already in control of these resources for efficiency reasons, it is only smart to keep that control when transforming into a hybrid. At the same time, incumbents have to orchestrate resources in order to create platform value. This means that incumbents must organize and leverage the resources within the ecosystem to achieve value for all user groups on the platform. Thus, hybrids must be able to control and orchestrate resources to gain a competitive advantage.

5) Optimize customer value, before focusing on the ecosystem value.

The idea to focus on all user groups within the ecosystem is highly advisable as a platform business. However, as a hybrid, the platform will most likely be served on a new product which is based on their core business. Therefore, incumbents should first focus on attracting as many customers as possible to the product before working on optimizing the ecosystem value. Also, incumbents typically have an existing customer base which is easier to approach than other user groups. Thus, hybrids should increase the customer value before facing the ecosystem value since it will allow for a greater user base.

6) Engage and connect user groups.

A platform can only create value if it has a sufficient user base and is interactive. Hybrids and platform businesses in general are exposed to the challenge to reach a large user base and create interactions between them. While a large user base is desirable, incumbents should be selective with whom they allow platform access. This concerns specifically external service providers since they could have negative effects on the platform quality. As a hybrid who has just entered the platform business, this is an important aspect to consider for future success. Thus, they must engage and connect user groups without harming the platform quality.

7) Monetize only once sufficient value has been created.

As a wannabe platform, a monetization of platform access or services is only justifiable if a significant value is created. Especially in the beginning when the hybrid business is operating with a smaller user base, it would only drive away potential users if they are charged for the platform transactions. Also, they would have a lower acceptance of the new product if it is associated with higher costs than the old or competitive products. Thus, hybrids should rather offer the platform for free at the start until they have created a platform value that rationalizes a monetization.

8) Possess financial incentives.

The development of a platform next to the regular business will lead to high up-front investments. The incumbent firm has to establish the required competences before operating with a new business model. Possible costs can incur through acquiring new employees and competences, upskilling existing employees and subsidizing the platform until sufficient value is created. Therefore, it is crucial that the incumbent possesses the financial resources to finance these costs and makes high up-front investments. Hence, financial liquidity can improve the chances for a platform success.

9) Prepare for intense competition.

Assuming that the incumbent is not a pioneer in the market wanting to establish a business platform, they should be prepared for an intense competition. This will not only include

players from their own industry, but most likely also technology firms operating as business platforms. Especially, technology firms can become a threat since they already own platform competences and experience. Therefore, the incumbent should be aware of possible competitors and have a clear and effective strategy in mind on how to establish a competitive advantage.

7 Discussion

7.1 Limitations

This research paper follows a qualitative research approach with an in-depth case study analysis. During the research, several shortcomings have been encountered which should be addressed in order to improve potential future investigations on this subject.

A single in-depth case study has been conducted which allowed to collect detailed and rich information. The general limitations of such an approach are associated with the failure to provide statistical proof and generalizability. The research is specifically tailored to the automotive industry and it is unknown whether the findings hold in different industries. Thus, using a combination of quantitative and qualitative approaches can further improve the research quality. In addition, the study could be replicated in order to create a multi-case comparison within the same industry or across different industries.

Regarding the data collection, only secondary data has been used to gather information on the case and generate new findings. Especially, internal press releases only include information that the firm wants to publish. Therefore, they have been looked upon with a critical eye, however, most likely the information is to an extent incomplete since topics like strategy are sensitive to every firm and not allowed to be published fully. Also, only using one data collection method offers a lower validity due to the lack of data triangulation. However, the current corona pandemic and the lack of possible company contacts has hindered the possibilities for conducting interviews. Thus, to compensate for that, a follow-up interview with a case representative could have been executed to validate the information gathered from secondary sources and provide better insights into the topic.

Lastly, this research has been executed in the context of a final graduation project which means that it was exposed to time constraints. Therefore, it was not possible to analyze the case over a longer period of time. The unit of analysis has been studied while being in the early adoption phase, thus, observations at different points in time could lead to further relevant findings and validate or reject the emerged findings.

7.2 Future Research and Implications

Future Research

This study has extended the literature in the research field of hybrid business model solutions by identifying and defining recommended practices for complementing the pipeline business with platform activities. However, at the same time it has also opened new paths for research.

The in-depth case study research allowed for defining recommended practices. Since these have been defined based on one case, it is suggested to reconstruct the study. There are two ways to do so by either selecting another case (1) within the same industry or (2) from a

different industry. It could reveal new insights and increase the generalizability of the results. In the case of selecting the automotive industry again, a second case study based on Daimler AG and BMW is suggested since the competitive landscape analysis shows that both firms are increasingly focused on the digital transformation. Moreover, it is recommended to use multiple sources of data. This can include interviews to validate the practices, observations to identify new practices or surveys to achieve a greater statistical proof.

One of the recommended practices is related to the organizational mindset of the pipeline business. A suggested area of research would be to analyze the impact of the organizational culture on the hybrid business model transformation. This could improve the understanding of the extent to which human beings can determine a successful implementation of hybrid business models and what other aspects, apart from innovativeness and agility, are relevant.

Also, the study focusses on the perspective of the platform owner. Thus, it is suggested to analyze the success of a hybrid business model from different perspectives. This could be either from the customer or supplier perspective to identify what the demands and requirements are in order to increase the incentives for participating in the ecosystem of a hybrid business. Moreover, it would enhance the understanding of how hybrids can differentiate themselves best from competitors.

Practical Implications

The research provides several recommendations for practice. Firstly, it increases the awareness about hybrid businesses. As mentioned before, in literature the research topic has received only limited attention, hence, not many pipeline businesses might be aware of this opportunity. Secondly, managers can gain more insights into relevant aspects during a hybrid business transformation. This can facilitate a better understanding of their business and support the identification of innovation possibilities. Since business models are highly unique in nature, the recommended practices have been formulated in a way which makes them applicable to companies of different sizes and industries.

Industry Implications

The case study has confirmed that the automotive industry is disrupted by business platforms and shows that incumbents are already aware of the disruption. So, automotive manufacturers have started the process of innovating their business model to maintain a competitive market position. The practices for hybrid business model transformation underline that not only does it require product innovations, but also changes in the organizational mindset. The first step is to divert from the traditional automotive mindset which is still strongly focused on the product performance. Agility and innovativeness are essential traits which should be established within the firm. This lies within the responsibility of the company leaders to communicate this with their employees and adjust the organizational culture accordingly. Moreover, in the development of an innovation, incumbents should not only focus on the customer, but think about the benefit for the entire ecosystem. An important finding of the case study are the benefits that incumbents have over new established firms or new entrants. Especially in the automotive industry, these benefits can be strongly beneficial since the industry has high barriers to entry which leads to a smaller number of market players.

8 Conclusion

Pipeline business models are being disrupted by multi-sided business platforms. The increasing usage of the internet and information technologies have enabled new opportunities for platforms to enter markets across all industries. While this creates a threat for existing pipeline businesses, it can also be viewed as an opportunity to achieve greater success. Especially, the concept of hybrid business models can offer the advantage of combining pipeline activities with platform activities. In order to identify how pipeline businesses can use the power of platform business models and thereby maintain a competitive position in the market, the following research question has been formulated: “How can incumbents leverage the power of platform business models to transform their pipeline business into a hybrid business?”. An in-depth case study has been conducted to test and evaluate existing frameworks on hybrid business model transformation. By applying these to the case study research, several benefits and challenges were identified which allowed for the definition of practices for the adoption of a hybrid business model. The practices aim to serve as a guideline for transformation.

The first key finding of this research is related to the benefits and challenges of the hybrid business model transformation. The results indicate that existing literature has overlooked the benefits of being a pipeline before becoming a platform business. When establishing a platform business, pipelines can profit from their existing brand equity among customers and the prior market and product knowledge. Moreover, in some cases pipelines have more brands within their portfolio which allows for a greater platform scalability. Also, the research has shown that during the transformation from a pipeline to a hybrid, firms encounter more challenges than benefits. These are restructuring the organization, developing a hardware and software, expanding the ecosystem, establishing network effects, defining a pricing strategy and preparing for market competition. While most of them are already supported by literature, two challenges have been extended and one has been rejected.

The second key finding includes the identification of recommended practices for realizing a transformation from a pipeline to a hybrid. In total, the research has revealed nine practices which are: (1) Develop an agile and innovative mindset; (2) Understand and maintain your core business while reinventing it; (3) Let the innovation cannibalize existing products; (4) Control and orchestrate resources; (5) Optimize customer value, before focusing on the ecosystem value; (6) Engage and connect user groups; (7) Monetize only once sufficient value has been created; (8) Possess financial incentives; and (9) Prepare for intense competition. The practices have been formulated with two-folded intentions. On the one hand, they should highlight that the existing benefits of pipelines should be utilized and not disregarded. On the other hand, they should make pipelines aware of the challenges that have to be mastered in order to be successful as a hybrid business.

The definition of practices for a hybrid business model transformation has enriched the literature on hybrid business models and fills the gap on how to redesign the business model in order to complement the pipelines with platform activities. Moreover, the research contributes to practice with providing guidance during the transformation.

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