

BUSINESS MODEL INNOVATION

Studies on business model design, protection, and anchoring

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Amir Bonakdar

from
Germany

Approved on the application of

Prof. Dr. Oliver Gassmann

and

Prof. Dr. Elgar Fleisch

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Abstract:

This dissertation explores how firms create and capture value with business model innovation. The goal is to contribute to research on business model innovation and to thereby strengthen firms' capabilities to innovate their business models more strategically and in a more sophisticated way as most of them already do for their products and technologies. The dissertation consists of four individual articles that address questions on business model design, protection, and the anchoring of business model innovation teams within organizations.

The *first article* deals with innovation teams commissioned to innovate a firm's business model. Based on a study of 20 global players from the manufacturing and service industry, the article shows how the teams' intra-firm network, that is the interaction with other organizational sub units within the firm, impacts the degree of novelty of the designed business models.

The *second article* is devoted to the question of how firms capture value from business model innovation by the use of formal and informal intellectual property (IP) protection strategies. The empirical analysis based on a case sample of 24 firms shows that the choice of IP protection is contingent on the applied business model.

The *third article* highlights that companies often systematically incorporate knowledge about existing solutions into the innovation process for products and technologies, but rarely do so, when it comes to business models. Based on a literature review and an empirical analysis of 29 firms, the article derives a framework for business model archetypes and discusses its application in the context of the innovation process.

The *fourth article* investigates on the role of design thinking in business model innovation. Based on the St. Gallen Business Model Navigator, expert interviews, and a workshop with experts from Stanford University's Center for Design Research the article provides insights and checklists on how to further enhance the initiation, ideation, and integration phase of the St. Gallen Business Model Navigator by the use of design thinking.

Zusammenfassung:

Die vorliegende Dissertation untersucht, wie Unternehmen mit Geschäftsmodellinnovationen Wert schaffen und Teile dieses Werts für das eigene Unternehmen sicherstellen können. Ziel ist es, hiermit einen Beitrag zur Geschäftsmodellforschung zu leisten und im Speziellen Unternehmen dazu zu befähigen, ihr Geschäftsmodell strategischer und differenzierter zu innovieren - so wie es in vielen Unternehmen bereits für Produkte und Technologien der Fall ist. Die Dissertation besteht aus vier individuellen Artikeln, die Fragen zum Geschäftsmodelldesign und –schutz sowie zur Verankerung von Geschäftsmodellinnovationsteams innerhalb von Unternehmen untersuchen.

Der *erste Artikel* beschäftigt sich mit Innovationsteams, die beauftragt wurden, ein neues Geschäftsmodell für ihre Firmen zu entwickeln. Im Rahmen einer Studie mit 20 Unternehmen aus der produzierenden und dienstleistenden Industrie wird aufgezeigt, wie das unternehmensinterne Netzwerk, das heisst die Interaktion der Innovationsteams mit anderen Unternehmenseinheiten, den Innovationsgrad der neu entwickelten Geschäftsmodelle beeinflusst.

Der *zweite Artikel* untersucht die Fragestellung, wie Unternehmen durch den Einsatz von formalen und informalen Schutzstrategien Werte für das eigene Unternehmen sicherstellen und ihr Geschäft vor Konkurrenz schützen können. Eine empirische Analyse von 24 Firmen, zeigt, dass die Wahl der Schutzstrategien abhängig vom angewandten Geschäftsmodell ist.

Der *dritte Artikel* beschäftigt sich mit der Fragestellung, wie Wissen über bestehende Geschäftsmodelle systematisch in den Innovationsprozess integriert werden kann. Basierend auf einer Literaturanalyse sowie einer empirischen Analyse von 29 Unternehmen wird ein Rahmenwerk für Geschäftsmodellarchetypen entwickelt und dessen Anwendung im Rahmen des Innovationsprozesses diskutiert.

Der *vierte Artikel* untersucht die Rolle von design thinking im Rahmen von Geschäftsmodellinnovation. Basierend auf dem St. Galler Business Model Navigator sowie Experteninterviews und einem Workshop mit Experten des Center for Design Research der Stanford University entwickelt der Artikel Erkenntnisse und Checklisten, um die Initiierungs-, die Ideengenerierungs-, und die Integrationphase des St. Galler Business Model Navigators weiter zu verfeinern.

1. Introduction

Firms with innovative business models are omnipresent in the current business environment. They do not only change the rules of the game in their own field of business, but also often reshape entire industries with great success. Airbnb turned millions of private homeowners and apartment dwellers into “hosts” renting out lodging to travellers and thereby disrupting the business model of traditional hotels. Founded only 2008, today it is valued with \$10 billion, which makes it more valuable than the Hyatt Hotels Corp. (Dickey, 2014). The San Francisco based startup Uber replaces the classic Taxi business model by connecting private vehicle owners with passengers and offering ride services that can be ordered through a mobile app. From its foundation in 2009 until today, it has become active in 70 cities in 41 countries and with a valuation of \$18 billion has become bigger than Hertz, Avis, or Budget (Sorkin, 2014). The on-demand Internet streaming service business model of Netflix made conventional brick-and-mortar video rental shops obsolete (Peterson, 2013). In the same vein, the music streaming company Spotify attacks Apple’s iTunes store with its new subscription based streaming business model (Dredge, 2014). This flat rate model for music makes purchases of single songs unattractive and is about to revolutionize the music industry again. These are only a few companies, who exemplify that business model innovations have a huge impact on the way business is done and that they are extremely powerful to attain competitive advantage.

As an overarching concept, a business model describes how a firm creates and delivers value for its customers and its partners, but at the same time how it captures parts of this value for itself and hence expresses the underlying logic of a firm’s business (Teece, 2010; Zott, Amit, & Massa, 2011). Various studies highlight the relevance and importance of business model innovation as being superior to other types of innovation. Business model innovators outperform product and process innovators in terms of total shareholder return (BCG, 2008). Innovating business models leads to greater competitive advantage than product or service innovations (Economist Intelligence Unit, 2005). Firms that focus on business model innovations increase operating margins much faster than those who put their emphasis on products and services (IBM, 2006).

In contrast to many successful startups, which challenged traditional companies with innovative business models, only few established firms have managed to innovate their existing ones successfully. One of them was Apple. Formerly a pure hardware manufacturer in the personal computer market, it struggled for many years with shrinking market shares due to a number of product flops. After launching the iPod/iTunes business model, Apple became the first company to successfully commercialize the mp3 technology and thereby revolutionized the music industry (Abel, 2008). To date, it represents the largest music distributor worldwide. Hilti as a leading manufacturer of construction tools fought the commoditization of their market and Asian competitors who were able to produce and offer their products much cheaper, but still good enough. Realizing that competing solely on the quality of products was not sufficient anymore, Hilti introduced the “fleet management” business model. Products were not sold up front per-item anymore but through a leasing model with recurring monthly revenues instead. By guarantying availability, maintenance, and management of their power tools Hilti’s customers were able to lower their administrative costs and concentrate on their core jobs (Johnson, Christensen, Kagermann, 2008). The new business model today accounts for a significant amount of Hilti’s tool sales revenue. IBM managed to reinvent their business model as well. Formerly a pure hardware manufacturer of semi-conductors the company faced big losses in the beginning of the 1990s, that threatened the existence of the company. IBM started to build a service business and leveraged its IT-expertise to offer its customers numerous services to handle their IT-demands (Chesbrough, 2007). Today, IBM Services Business accounts for more than half of its revenue.

Despite their success, all of these established companies have in common, that they started to innovate their business model only after they faced severe challenges with their current ones. The list of companies who missed the time to adopt their business model to future challenges and hence failed is much longer. It caused them painful cutbacks or even bankruptcy. Kodak missed the adoption to digital photography and filed for bankruptcy (Hsu, 2012). Blockbuster had to close its video rental stores due to the rise of Netflix (Peterson, 2013). Quelle, formerly Germany’s largest catalog seller, failed to successfully go online and also filed for bankruptcy (Burt, 2010). Motorola missed to switch its focus from hardware sales to innovative software

applications and - after severe struggles - was bought by Google mainly due to its remaining patent portfolio and is now being sold again to Lenovo (Baptiste, 2014). More firms can be added.

Why do firms only start to innovate their business model when they are already struggling or when it is almost too late? One aspect is that although the awareness of the benefits of business model innovation rises, its systematic application, similar to product or technology innovation, has not been institutionalized in the corporate environment yet. Global companies do not allocate more than 10% of their innovation budget to the design of innovative business models (Johnson et al., 2008). To date, firms' capabilities to create new business models or to protect them from competition are still underdeveloped.

Despite the high practical relevance of business model innovation, academic research on the field is still limited. A study of Zott et al. (2011) on past business model literature indeed reflects the practical importance of business model innovation. The results show that the number of non-academic publications since the mid-1990s has exponentially risen. Academic publications, however, have still fallen short (see Figure 1).

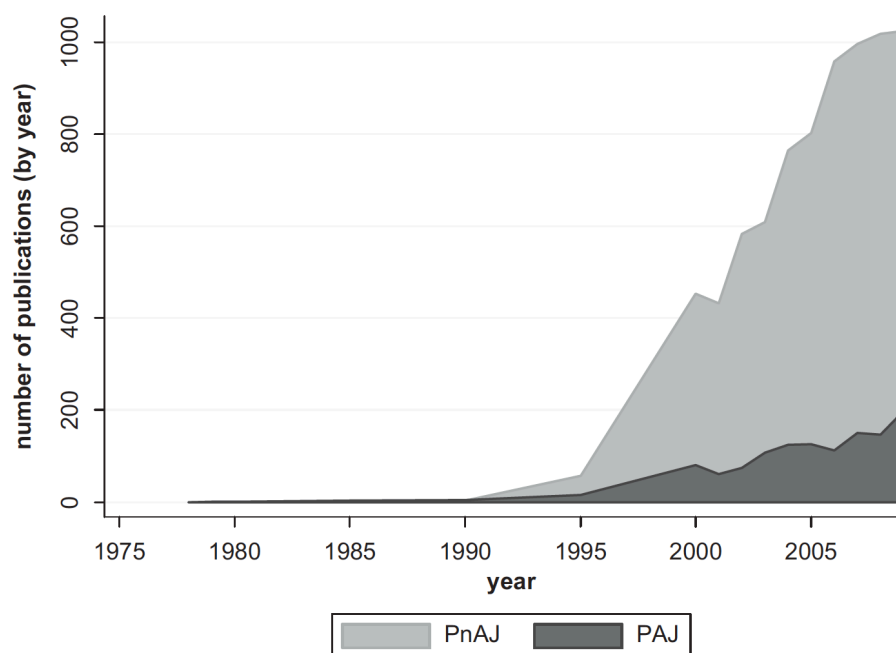


Figure 1: Business model articles in the Business/Management field

Source: Zott et al. (2011)

Furthermore, findings imply that academic research agrees, that the business model depicts a new unit of analysis and represents a holistic view on how firms “do business”. On the other side, academic business model research is still dispersed, conducted in silos, and regarded as a quite young and burgeoning research field (Zott et al. 2011). The challenges of incumbents to innovate their business models before they are forced to do so by external events have also been addressed by past business model research. Chesbrough (2010) points out that firms face high barriers to business model innovation, as (a) new business models are in conflict with the current way firms create value (Amit & Zott, 2001), (b) firms allocate their resources to established areas with higher margins (Christensen, 1997), (c) firms are often cognitively trapped in the dominant industry logic (Prahalad & Bettis, 1995; Chesbrough & Rosenbloom, 2002), and (d) responsibilities for business model innovation are not defined in firms, which leads to a so-called “business model leadership gap” (Chesbrough, 2010). Pathways or solutions that support incumbents to innovate their business models continuously, similar to products and technologies, are rare.

This dissertation provides four individual articles that deal with the challenges mentioned above. It does not claim to have the answers to all challenges raised, but the intention is to shed light on this so far under-investigated phenomenon and to advance business model research on this highly relevant topic. The goal is to strengthen firms’ capabilities to innovate their business models more strategically and more sophisticated as they already do for products and technology.

The first article points toward the social side of business model innovation. It examines 76 intra-firm networks of business model innovation project teams interacting with various organizational subunits within their firms to innovate their business models. The analysis takes place in 20 global players in the manufacturing and service industry, headquartered in Germany and Switzerland. In particular, the article analyzes the network configurations of business model innovation project teams and their effects on the creation of novelty-centered business model innovations. The results suggest a U-shaped relationship between tie strength and novelty-centered business model design. Furthermore, findings imply a linear, positive relationship between network closeness and novelty-centered business model design.

The second article addresses the question of how firms capture value from business model innovations. The article draws on a sample of 24 cases and explores how business models relate to IP protection mechanisms for value capture. Based on that a business model protection framework is derived. The empirical study reveals that the choice of IP protection is contingent on the applied business model. While razor and blade business models are characterized by both a high degree of formal and informal protection, firms operating with franchising business models put higher emphasis on informal protection strategies. Firms running the pay-per-use business model or the multi-sided platform business model, apply both informal as well as formal protection strategies to a medium degree in order to profit from business model innovation.

The third article highlights that while companies often systematically incorporate knowledge about existing solutions into the innovation process for products or processes, they rarely do so for business models. It emphasizes that the systematic use of knowledge about existing business models is key for an effective and efficient innovation process. Even though business models are highly company-specific, they can be aggregated into archetypes that allow for a general categorization of all types of business models. Based on a literature review and an empirical analysis of a 29 firms, a framework for business model archetypes is developed. Subsequently, implications for its application in the innovation process are drawn. The results indicate, that the framework of business model archetypes can be used in the early stages of the innovation process, thereby contributing to better results, particularly in the ideation phase.

The fourth and last article examines the role of design thinking in business model innovation and gives recommendations on how to use design thinking elements to further enhance the business model innovation process. Based on expert interviews and a workshop with experts from Stanford University's Center for Design Research the article provides insights and checklists on how to further enhance the initiation, ideation, and integration phase of the St. Gallen Business Model Navigator by the use of design thinking.

2. Intra-firm networks and novelty-centered business models

Co-authored by Karolin Frankenberger and Oliver Gassmann

The business model concept refers to as a boundary-spanning activity system, which focuses on a focal firm, while at the same time taking into account the value creating and value delivering activities of partners, suppliers, and customers. While past research has predominantly focused on value creating and delivering mechanisms of business models, we go beyond this transactional dimension and extend business model literature on social relationships between participants, who create novelty-centered business models. In particular, we examined intra-firm networks of business model innovation project teams and their effects on the creation of novelty-centered business model innovations. An analysis of 76 intra-firm network configurations in 20 incumbents within the service and manufacturing industry confirmed the hypotheses. Tie strength between business model innovation project teams and their interacting organizational subunits shows a U-shaped relationship with novelty-centered business model design, whereas network closeness and novelty-centered business models are positively, linear related.

2.1. Introduction

The business model concept has raised substantial attention among both academics scholars and practitioners in recent years (Baden-Fuller & Morgan, 2010; Chesbrough, 2007; McGrath, 2010; Zott, Amit, & Massa, 2011). Although literature provides several definitions with regard to a business model, academics agree, that the business model describes the basic logic of how a firm “does business” (Teece, 2010; Zott et al., 2011). Research on business models is relatively young and researchers in the past have predominantly focused on how activities performed in the context of a firm’s business model create value for partners and a surplus for customers, while at the same time generating and capturing profits for the focal firm itself (Björkdahl, 2009; Magretta, 2002; Shafer, Smith, & Linder, 2005; Teece, 2010; Zott et al., 2011).

Apart from this transactional dimension, questions about the social aspects, that are the relationships between organizational actors who create business models, remain unanswered. This is surprising since prior research has recommended to investigate social aspects of business model participants in order to refine theory (Zott & Amit, 2010).

In order to contribute to a better understanding on the social side business models, we analyzed the 76 intra-firm networks of business model innovation project teams interacting with various organizational subunits of their firms to innovate their business models. Our results suggest a U-shaped relationship between tie strength and novelty-centered business model design. Furthermore, findings imply a linear, positive relationship between network closeness and novelty-centered business model design.

Our study contributes to the field of business models by incorporating its social side that is the effects of the social capital constructs tie strength and network closure on the degree of novelty-centered business model design. Furthermore, to our best knowledge, we are the first to extend social network literature on novel insights about the effects of intra-firm network configurations in the context of business model innovations.

2.2. Theoretical background

2.2.1. Novelty-centered business model design

Zott & Amit (2010) define the business model as an activity system, that spans boundaries and focuses on a focal firm, while at the same time taking into account the value creating and value delivering activities of partners, suppliers, and customers (Brandenburger & Stuart, 1996). Zott & Amit (2007, p. 181) describe business model design as “the design of an organization’s set of boundary-spanning transactions” and distinguish between different themes, which can be part in any particular business model. “The design themes describe the holistic gestalt of a firm’s business model, and they facilitate its conceptualization and measurement” (Zott & Amit, 2008, p. 4). Two themes of business model designs have been identified in past research - novelty-centered and efficiency-centered business model designs (Zott & Amit, 2007, 2008). Novelty-centered business model designs are characterized by performing business with various participants in new ways. It can be achieved by connecting existing participants in novel ways or linking new participants, who were previously not involved in economic exchanges. Novelty-centered business models recombine products, services, and information in new ways. Firms, who apply novelty-centered business model designs, usually are pioneers in their industry. Efficiency-centered business model designs, on the other hand, focus on reducing transaction costs in terms of process or inventory costs and enable fast transactions, where participants can make informed decisions (Williamson, 1975; Zott & Amit, 2008).

However, different from efficiency-centered designs, which are characterized by operating existing business models with an emphasis on lower costs (Zott, 2003), it is much more challenging to design and implement novelty-centered business model designs in incumbent firms. Especially, incumbents face the challenge that the novel design often conflicts with the traditional configuration of firm assets and its current value creation and appropriation mechanisms (Amit & Zott, 2001). Managers are, therefore, likely to resist changes that would threaten their ongoing value (Chesbrough, 2010). This is especially the case for novelty-centered designs as uncertainty is higher and future success more difficult to predict.

The goal of our study is to investigate how firms can tackle these challenges of business model innovation and to design novelty-centered business models. Hence,

we focus on novelty-centered business models, while still taking into account that both design themes are not mutually exclusive (Zott & Amit, 2007).

Investigating, which intra-firm network configurations of business model innovation teams are ideally suited to overcome these barriers and to create a novelty-centered business model designs, depicts an area of research neglected so far. This is surprising since prior research has recommended to examine the social side of business models by investigating the relationships of the relevant business model participants (Zott & Amit, 2010). The next section presents theory about intra-firm networks.

2.2.2. Intra-organizational networks

An organization can be viewed as a network of organizational units that represent nodes, that interact with one another and thereby establish formal as well as informal relationships (Brass, Galaskiewicz, Greve, & Tsai, 2004). These linkages between organizational units are based on the relationships of individual members, who interact interpersonally and extend their relationship originally founded as representatives of their units or groups (Kilduff & Tsai, 2003; Lechner, Frankenberger, & Floyd, 2010). Recently, various researchers have examined the different effects of networks on innovation (Fleming & Marx, 2006; Moran, 2005; Obstfeld, 2005; Rodan & Galunic, 2004; Smith, Collins, Clark, & Smith, 2005).

The reason for the increasing attention among researchers is that innovation is not only created by individual actors inventing in isolation, but results from the interactions of multiple actors sharing diverse knowledge trusting and supporting each other (Landry, Amara, & Lamari, 2002; Zheng, 2010). These activities can be influenced by certain patterns of inter-unit ties (Brass et al., 2004). Research on intra-organizational networks can shed light on how intra-organizational units share their resources with other organizational units in order to improve innovation (Kilduff & Tsai, 2003; Tsai & Ghoshal, 1998).

Most intra-firm network studies suggested a positive influence of networks on innovation. Smith et al. (2005) showed that the number of direct contacts employees hold within their intra-firm network and the strength of these ties are positively related to their knowledge creation capabilities, which in turn fosters the number of products and services the firm introduces. Tsai and Ghoshal (1998) demonstrated that greater

centrality of units in an organizational network is positively related to inter-unit resource exchange, which impacts product innovations positively. Obstfeld (2005) found in a study of the engineering division of an automotive manufacturer that higher network density of an individual's social net is positively related to his or her involvement in innovation.

On the other hand, some studies also found diminishing returns or negative outcomes from social networks. In a study of research scientists involved in university related biomedical research, McFadyen & Cannella (2004) found a quadratic (inverted U-shaped) relationship between in the number as well as the strength of relations and knowledge creation. Hansen, Podolny, & Pfeffer (2001) gathered intergroup data of 67 product development teams and concluded that a network structure, which is characterized by numerous strong and non-redundant ties, reduced project completion time of teams with exploratory tasks. However, a negative influence was found for teams whose tasks included the exploitation of existing organizational expertise.

Most of the prior intra-firm network studies, which investigated the effects of social networks on innovation, put their focus on product or service innovations. So far research on the effects in the context of business model innovation lacks findings. This is surprising because different from product or service innovations, business model innovations have a much higher impact on a firm's boundary-spanning activity system, and hence, need to be explored differently from only innovating products and services. In addition, most of the studies focused on innovation performance. The interesting question how different configurations of intra-firm networks influence the business model designs created by business model innovation teams has been left out. Different network configurations imply different behavior in terms of knowledge exchange, trust, support, and commitment, which in turn foster or inhibit the design of novelty-centered business model. Furthermore, to our best knowledge research has not yet examined the effects of intra-firm networks in the context of business model innovations.

2.3. Hypothesis development

We argue that the intra-firm network of business model innovation project teams impacts the design of newly developed business models. More specifically, we argue that the degree of tie strength and network closeness affects the degree of novelty of the created business model.

2.3.1. Tie Strength and Novelty-Centered Business Models

Tie strength describes the nature of a relationship in terms of a mix of the amount of time, the emotional intensity and intimacy as well as the reciprocity associated with it (Granovetter, 1973; Lechner et al., 2010). In order to describe the role of tie strength in the creation of novelty-centered business models in incumbent firms, three possible network configurations are presented in Figure 2. When the business model innovation team holds strong ties to other organizational subunits (see left network diagram in Figure 2), the business model innovation team creates trust and support, which motivates for collaborative activities and generates collective identity (Coleman, 1988; Krackhardt, 1992; Reagans & Zuckerman, 2001; Smith et al., 2005).

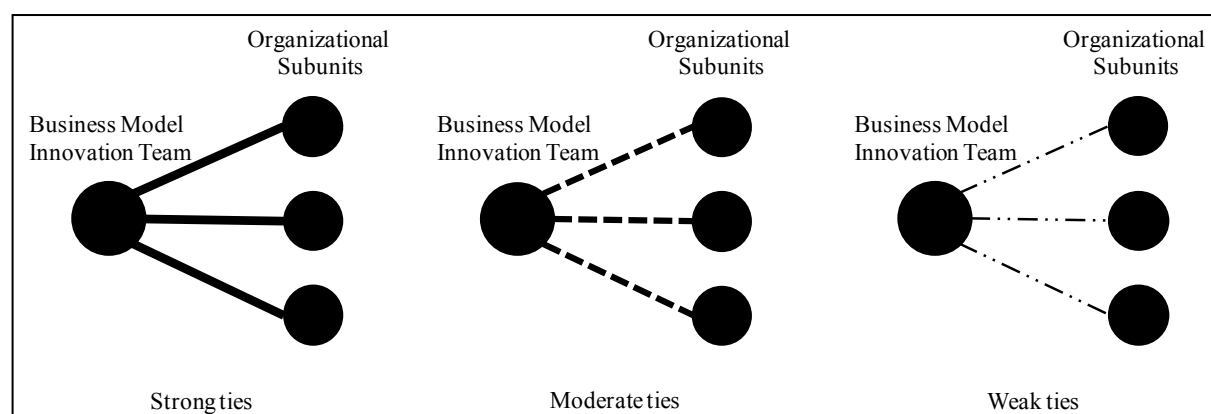


Figure 2: Network diagram for tie strength

Trust and support are especially important for business model innovation teams as managers are more likely to resist experiments with novel business models as business model changes affect the whole organization and its ongoing value generation mechanisms. Interactions between operations, engineering, marketing, sales, and finance and may involve conflicts with some or all of these functions as they might

see their current way of doing business threatened (Chesbrough, 2010). Trust and support between these functions and the business model innovation team are likely to help resolving these conflicts and shaping commitment to design and implement novel business models. When ties are strong, other units or functions are more likely to agree to support the business model innovation team for example through joint problem solving and the exchange and combination of resources (Tsai & Ghoshal, 1998; Uzzi, 1997). The business model innovation team is more likely to view other units as reliable sources of information and vice-versa (Lechner et al., 2010). Furthermore, higher trust increases the willingness to share information openly and facilitates knowledge transfer and reduces the level of conflict in the participants' minds (Lechner et al., 2010; Szulanski, 1996). In total, strong ties foster familiar and close contacts with high trust personal relations, which allow the exchange partners to reduce conflicts thereby encouraging to design and implement highly novel ideas (Landry et al., 2002; Moran, 2005).

Meanwhile, business model innovation teams holding weak ties to other organizational units (see right network diagram in Figure 2) enjoy organizational autonomy, which means that they are less constrained by the organization itself (Granovetter, 1973; Hansen, 1999). Being only loosely connected to other units opens up the space for novel and creative ideas (Perry-Smith, 2006). The business model innovation team avoids social obligations to other units, which could induce derailing the original goals of the business model innovation team (Gimeno & Woo, 1996; Lechner et al., 2010; Uzzi, 1997). These social obligations could lead to making compromises about the degree of novelty of the respective business model. The business model innovation team would feel pressured to appease potential fears of the interacting units about the radicalness of the business model innovation. Thereby, the team is likely to reduce the degree of novelty of the business model innovation and derive a rather incremental innovation one in order to keep the interacting units happy. In total, weak ties are especially beneficial for creating novelty-centered business models, as they provide space for the business model innovation team to think outside the organization's systems and beliefs.

However, a business model innovation team holding moderate ties to other organizational subunits (see middle network diagram in Figure 2) is less likely to receive commitment of the other organizational sub-units to create novel business

models than when holding strong ties. The possibility for the business model innovation team to create novel business models decreases as the interacting units have less trust in the project and hence, provide less support and are less willing to share resources as when ties are strong.

Also, the business model innovation team obtains less autonomy benefits when ties are weak. When enjoying less autonomy from the other organizational subunits, it is less able to think outside the firms systems. The team feels more social pressure to make compromises about the degree of novelty to keep the other units happy.

In total, a moderate level of tie strength leads to rather incremental than novel business model innovations. Therefore, we suggest following hypothesis.

Hypothesis 1: Tie strength is likely to show a U-shaped relationship with the creation of novelty-centered business model innovations.

2.3.2. Network Closeness and Novelty-Centered Business Models

Network closeness refers to the degree to which the interacting sub-units of the business model innovation team are connected to one another (Barnes, 1969; Hansen et al., 2001; Zheng, 2010). It is closely related to the term of structural holes, which emerge, when partners a focal actor is connected to, are themselves unconnected (Burt, 1992). Both constructs are often used in parallel (Hansen et al., 2001; Zheng, 2010). Research argues in two opposing directions about its effects.

The first group of researchers follows Burt's (1992, 2004) seminal work and suggests that structural holes favor information diversity, as the information provided to the focal actor through structural holes is non-redundant and, thereby, offers different views and perspectives (Adler & Kwon, 2002; Burt, 1992, 2004; Gnyawali & Madhavan, 2001; Koka & Prescott, 2002; Lechner et al., 2010). The different sources of non-overlapping information give the focal actor a broader range of alternatives that enables higher quality-decisions (Lechner et al., 2010). Being able to broker the different information flows through sparse networks with high degrees of structural holes empowers entrepreneurial behavior by matching different otherwise unconnected parties of the network and contributes to innovation (Burt, 1992, 2004; Rost, 2011).

The second group of researchers argues in an opposing direction and follows Coleman's (1988) suggestions that network closure, that is the connectedness of network contacts (Barnes, 1969), creates norms and trustworthiness between the network participants. A higher level of norms and trustworthiness decreases exchange hazards and the risk of opportunism (Phelps, Wadhwa, Yoo, & Simon, 2010), while at the same time increasing cooperation, inducing the willingness to dedicate time and effort for assisting others (Reagans & McEvily, 2003), and supporting knowledge transfer (Phelps et al., 2010). In total, it can be summarized that the positive effects of cohesive networks with few structural holes lead to stronger commitment between the network actors. Therefore, innovative work performance increases as level of structural holes decrease (Rodan & Galunic, 2004). As both views have been proven to be valid, research recognized that the benefits of sparse or dense networks are contingent on their particular application (Burt, 1992, 2004; Gabby & Zuckerman, 1998; Hansen, 1999; Lin, 2001; Podolny & Baron, 1997; Uzzi, 1997; Walker, Kogut, Shan, 1997; Zheng, 2010).

Information diversity, on the one hand is critical to business model innovation, as it supports the participants to break the dominant logic (Bettis & Prahalad, 1995; Prahalad & Bettis, 1986), a barrier of business model innovation (Chesbrough, 2010). However, the access to diverse information fostered by structural holes in intra-firm networks is by its nature only firm internal. In order to develop novelty-centered business models, it is important to challenge existing "industry-laws" and current business logics (Frankenberger, Weiblen, Csik, & Gassmann, 2013). To support this "out-of-the-box" thinking, it is more favorable to access novel information outside the firm or even outside industry boundaries than inside the firm.

Therefore, in the context of business model innovation, we suggest that the solidarity benefits of cohesive networks outweigh the information benefits of sparse networks in order to develop novelty-centered business models. Solidarity, in terms of trustworthiness, norms, and commitment are especially important for developing novelty-centered business model designs, since high novelty increases network partners' uncertainty (Pisano 1989). Uncertainty about the future success of novelty-centered business models inhibits network partners' willingness in committing themselves to devote efforts to establish the novel business model. The risk of opportunistic behavior increases, while at the same time the level of cooperation and

knowledge transfer decreases. Dense networks with few structural holes countervail these effects as network actors' behavior in dense networks is more transparent and opportunistic behavior and less commitment is more visible and could damage the actors' reputations (Coleman, 1988). In addition, in order to design novelty-centered business models, it is equally important not only to access novel knowledge, but also to transfer, mobilize, and integrate this knowledge, which has been proven to be better in cohesive networks with few structural holes (Kogut, 2000; Phelps et al., 2010). Furthermore, dense networks with few structural holes can play an important role to reshape, interpret, and integrate the distant information obtained outside the company. Since the benefits of close networks result from reducing uncertainty and uncertainty increases with the degree of novelty of the respective business model innovation, the benefits of close networks to develop novelty-centered business models will also increase. Therefore, we suggest the following hypothesis.

Hypothesis 2: Network closeness is likely to show a positive, linear relationship with the creation of novelty-centered business model innovations.

2.4. Methodology

2.4.1. Sample and Data Collection

We started data collection by conducting interviews with 11 CTOs and corporate innovation managers from various multinational firms in the Swiss and German economy. All of them partnered with us in the context of an underlying research project on business model innovation in the period of November 2011 to November 2013. The semi-structured interviews were all conducted in-person and totaled an interview time of 10 hours. The intension of the interviews was to get a detailed understanding about the challenges they faced in the context of business model innovation and what facilitated or hindered them on building and maintaining their networks. The interviews, together with intensive literature search on business model innovation, business model design, and social networks built the foundation for our hypotheses and the development of our network questionnaire. We, thereby, went

iteratively back-and-forth between generated field data and existing literature (Miles & Huberman, 1994).

Subsequently, we developed a network questionnaire to test our hypotheses and distributed it to the CTOs and corporate innovation managers of our research project. In addition, we approached new industry contacts and likewise distributed the questionnaire. In total, we collected data from 20 large multinational firms from the manufacturing and service industries. Collecting data about business model innovation projects that were conducted in different industries helped us to increase the external validity of our research.

In order to detect a set of business model innovation projects, we followed an approach similar to Lechner et al. (2010) and McGrath (2001). We approached the CTOs or corporate innovation managers of the firms with a list of criteria in order to identify business model innovation projects throughout the company. In detail, we asked them to identify all projects that were considered to have changed the firm's business model in a way, which is new to the firm (Amit & Zott, 2012; Björkdahl & Holmén, 2013), or new to the industry in which the firm competes (Johnson et al., 2008; Snihur & Zott, 2013), or entirely new to the world (Thompson & MacMillan, 2010).

In order to avoid biases through incomplete memory of past events, we only selected projects, which were completed within the last 18 months. We asked for "successful" and "unsuccessful" projects in order to inhibit survival biases. After discussing the potential, it became clear which projects to include or drop from list. In total, we analyzed 76 business model innovation projects. Our contact persons named the project leads of each project, as they were the persons with most knowledge about the projects (Hansen, 1999).

Our research followed the logic that business model innovation projects form relatively independent units, which interact with various other organizational units within the firm. Subsequent to the conversations we had with our contact persons, we chose an ego-centric network approach, which has been conducted in various past studies (Marsden, 2002; Obstfeld, 2005; Rost, 2011; Rowley, Behrens, & Krackhardt, 2000). The ego-centric network approach identifies network boundaries by focusing on all relevant network exchange partners (called alters) the business model

innovation team (called ego) interacted with during the project. Building on past literature, we applied the name generator technique (Burt, 1997). We asked the project leads of each project following question: “Please enter the business units, corporate units, and/or business functions that you worked with in this project.” The project leads could list up to 24 network contacts they worked with during the business model innovation project. Subsequently, the project leads were asked to assess the social relationships between (a) the business model innovation teams and all identified units and (b) also the relationships between these units.

After pre-testing the questionnaire with the CTOs and corporate innovation managers, we decided to conduct the survey via telephone interviews in order to guarantee that the questionnaires were filled out correctly and support in case of lack of clarity. In total, we conducted 76 telephone interviews, which lasted from 30 minutes to 75 minutes. As the project leads were contacted prior to the interviews by the top management of the respective case companies, all of the project leads asked to participate in our survey agreed to do so and completed the questionnaires, which led to a 100 percent response rate.

2.4.2. Measures

Two kinds of measures were applied in this study - relational and non-relational measures. We used the relational measures to calculate the network-specific variables for tie-strength and network closeness. The non-relational measures were used to assess the novelty-centered business model design. Most of the measures were operationalized by multi-item and 7-point Likert type scales. We, thereby, relied on existing measures. After collecting the data, we conducted a factor analysis to examine the dimensionality of measures and the appropriateness of the items. When necessary we dropped items to increase the internal consistency of our scales. Subsequently, we calculated the mean averages across the items for each construct.

In order to calculate the network data, we transformed the relational measures into locational properties using network analytics. We created socio-matrices for each relational measure and each business model innovation project, which enabled us to calculate the relational measures of ties between the ego and each alter and in addition between each alters per project.

Independent and Moderating Variables

Tie strength. Following previous studies, we measured tie strength as an average score of the frequency and closeness, which were stated on the 7-point Likert type scales (Hansen, 1999, 2005; Lechner et al., 2010; Rost, 2011). We asked the project leads to assess the relationships of their project teams to the other organizational units as well as the relationships between these units. Specifically, we asked following question for frequency: “How frequently did people from your project team interact (e.g. phone calls, formal/informal meetings, emails, chat, etc.) with following corporate, business and functional units for issues related to the daily job (on average over the past 18 months of the project)?” For closeness we asked: “How close was the working relationship between your project team and the following corporate, business and functional units (on average over the past 18 months of the project)?” Depending on the number of organizational units the project teams interacted with during the business model innovation project, we received multiple scores for frequency and closeness. In order to calculate the degree of tie strength, we drew on the sociomatrices we built for each business model innovation project and calculated the average of all frequency and closeness scores reported between the business model innovation team and the organizational units the team interacted with. Principal component analysis generated one factor with a Cronbach’s alpha of .78.

Network Closeness. In order to measure network closeness, we adopted the approach of Hansen et al. (2001) based on Burt’s (1992, 1997) and Podolny and Baron’s (1997) procedure. First, we asked the project leads of each business model innovation project to assess the strength of ties between each pair of contacts (indirect ties) they listed in their egocentric network. Like Hansen et al. (1999), we used a computerized survey, which listed all possible pairs of organizational units, the project team interacted with during the project. In detail, we asked just as for the direct ties for frequency: “How frequently do/did people from e.g. Unit A interact (e.g. phone calls, formal/informal meetings, emails, chat, etc.) with the following corporate, business, and functional units for issues related to the daily job (on average over the past 18 months of the project)?” For closeness we asked: “How close is/was the working relationship between e.g. Unit A and the following corporate, business and functional units (on average over the past 18 months of the project)?” Hereafter, a list of the remaining reported organizational units was presented to the project lead and we asked them to

assess the relationship between the units on 7-point Likert-type scales. The procedure was conducted for each unit reported, so that all possible pairs were evaluated. Second, in order to determine if a tie existed between a pair of units we made the assumption that the average of frequency and closeness had to amount to the score of “2” or higher. Third, in order to derive the measure, we divided the number of reported indirect ties by the number of maximum indirect ties possible.

Dependent Variable

Novelty-Centered Business Model Design. To determine novelty-centered business model design, we adopted the measure of Zott and Amit (2007, 2008). After pre-testing the measure with CTOs and corporate innovation managers of our research sample, we asked following question: “To what extent do you agree to the following statements about the business model innovation (BMI); (from 1. “do not agree at all” to 7. “Fully agree”). 1. The BMI offers new combinations of products, services and information; 2. The BMI brings together new participants (e.g. colleagues, customers, partners, suppliers); 3. The BMI links existing participants in novel ways; 4. You claim to be a pioneer with your BMI (in your industry); 5. There are other aspects of the BMI that make it novel” ($\alpha = .70$).

Control Variables

We controlled on project variables as well on firm and industry level. Project controls included the team size of the business model innovation project, in particular the core team and well as all people involved in the project (Hansen, 1999; McGrath, 2001; Lechner et al, 2010). Larger teams could develop more innovative business models due to the more different perspectives and higher resources available through their team size. We applied the same line of reasoning to control for network size. As a company control, we employed the company size (number of employees). We figured that smaller companies are more agile and could employ the novel business model faster than large and more rigid companies. We also controlled for the industry the companies operated in, as we thought that the industry sector affects the degree of novelty of the respective business model (McGrath, 2001). Two categories were used: manufacturing and service. Furthermore, we controlled for R&D intensity as firms

with higher investments in R&D in relation to their revenues are expected to develop business models with a higher degree of novelty. Finally, we controlled for the openness of the project in terms of the extent to which the team went outside the company to obtain project-specific knowledge. As business models innovation is regarded as an innovation, which is often new to the industry, we expected teams to search for knowledge outside firm or industry boundaries will create more novel business models (Snihur & Zott, 2013).

2.5. Results and discussion

Table 1 presents the means, the standard deviations, and the correlations for each of the variables that we used in the study. We found no significant correlations between the network variables tie strength and network closeness and the control variables openness, R&D intensity, industry, firm size, team size. Also, correlations among the network variables were non-significant.

Table 2 shows the results of the hierarchical regression analysis we conducted to test for our hypotheses. Before employing the variables in the regression models, we mean centered them. We calculated three models. While Model 1 includes only the six control variables, namely openness, R&D intensity, industry, firm size, team size, and network size, in Model 2 we added the network variable tie strength and tie strength squared. The squared variable of tie strength was included to test for the curvilinear relationship between tie strength and novelty-centered business model design. Finally, in Model 3, we included the network variable network closeness.

In Model 1, two control variables (openness, R&D intensity) were found to have a positive, significant relationship with novelty-centered business model design at the .01 level. In Model 2, with an adjusted R^2 of .205 again the control variables openness and R&D intensity show a positive and significant effect at the .01 and .05 levels on novelty-centered business model design. Furthermore, the results of Model 2 support *Hypothesis 1* of a U-shaped relationship between tie strength and novelty-centered business model design. The coefficient for the squared term of tie strength is positive and significant while the estimate for tie strength is negative and significant. The results indicate that tie strength has a negative and statistically significant effect on

novelty-centered business model design ($\beta = -1.84, p < 0.05$), while the estimate for tie strength squared indicates a positive and significant effect on novelty-centered business model design ($\beta = 1.77, p < 0.05$).

Table 1: Means, standard deviations, and correlations

Variables	Mean	S.D.	1	2	3	4	5	6	7	8
1. Openness	4.50	1.97								
2. R&D intensity	6.73	5.35	-.167							
3. Industry	0.50	0.50	-.040	.500**						
4. Firm size ^a	4.43	0.80	.199	.072	-.314**					
5. Team size ^a	0.73	0.33	.247*	.128	.203	.035				
6. Network size	7.12	4.06	.103	.163	.167	.042	.292*			
7. Tie strength	4.60	0.97	.013	.086	.132	-.015	.120	-.223		
8. Network closure	0.87	0.25	.004	.093	.011	.038	-.080	.087	.094	
9. Novelty-centered design	5.34	1.16	.312**	.245*	-.014	.208	.076	.144	-.055	.217

N = 76; b Logarithm; *p < .05; **p < .01

Table 2: Results of regression analysis for novelty-centered business model design

	Model 1	Model 2	Model 3
	β	β	β
Control Variables			
Openness	.360**	.320**	.308**
R&D intensity	.360**	.335*	.309*
Industry	-.132	-.060	-.044
Firm size ^b	.068	.092	.092
Team size ^b	-.059	-.085	-.054
Network size	.085	.105	-.075
Independent Variables			
Tie strength		-1.838*	-1.995**
Tie strength ²		1.770*	1.894*
Network closeness			0.216*
Adjusted R ²	.153	.205	.243
F	3.255**	3.658**	3.743**

N = 76; *p < .05; ** p < .01; *** p < .001

To facilitate interpretation of this effect, we plotted the relationship between tie strength and novelty-centered business model design in Figure 3.

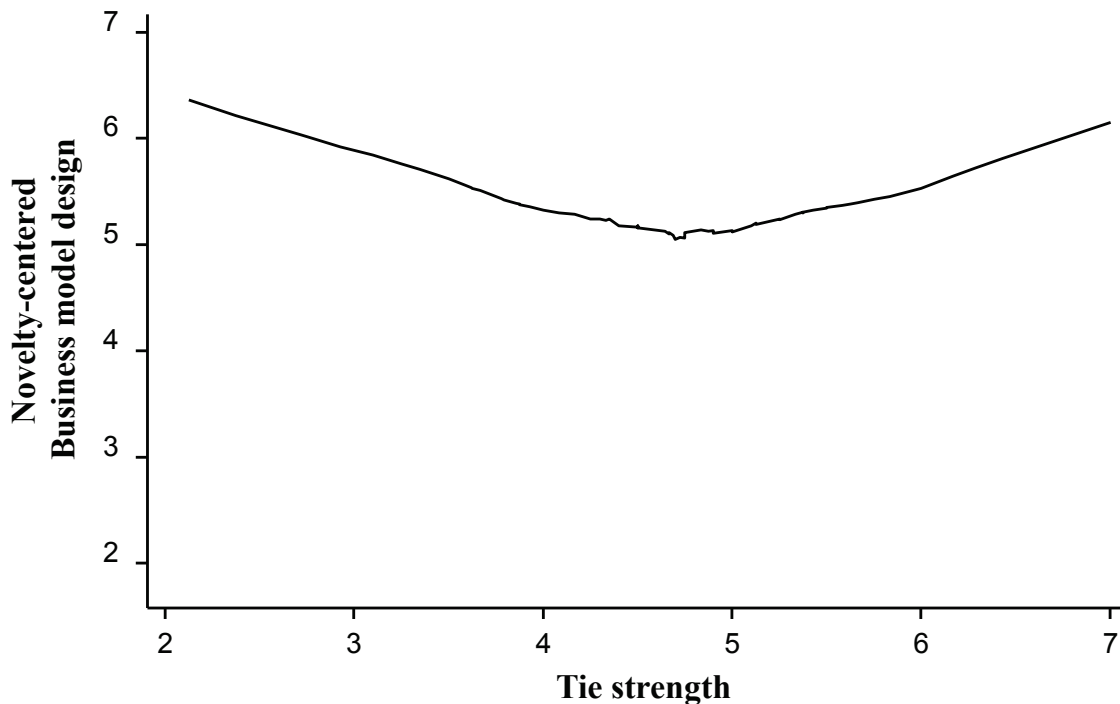


Figure 3: Tie strength and novelty-centered business model design

As expected, the results disclose that business model innovation teams, that hold strong ties to other organizational subunits, create business model innovations with high degrees of novelty-centered business model design. The degree of novelty of the designed business models declines when the teams' ties are at a moderate level. However, the declined level of novelty increases again when the business model innovation team holds weak ties to the interacting organizational sub-units. The findings support our line of reasoning that teams with strong ties benefit from familiar and close contacts with a high level of trust, which reduce conflicts among the business model innovation team and the other organizational sub-units and encourages due to radical changes of the current business model creating business model innovations with a high degree of novelty. On the other hand, the results confirm to us in our suggestion that teams holding weak ties also generate business model innovations with a high degree of novelty, as they benefit from structural autonomy, which allows thinking outside the organization's systems and beliefs and not being pressured by the interacting units to agree on bad compromises. At a moderate level of

tie strength the benefits of both strong and weak ties decrease, which leads to a decline in the degree of novelty of the created business model.

To examine the findings for Hypothesis 2, we added the network closeness variable to the Model 3 of our regression (see right side of Table 2). The results show a positive and significant effect of the relationship between network closeness and novelty-centered business model design ($\beta = 0.216$, $p < 0.05$) and therefore support *Hypothesis 2*. As we expected in the context of business model innovation, the solidarity benefits of cohesive networks (Coleman, 1988, 1990) outweigh the information benefits of sparse networks (Burt, 1988, 1990). As depicted in Figure 4 the degree of novelty-centered business model design increases with more cohesive networks.

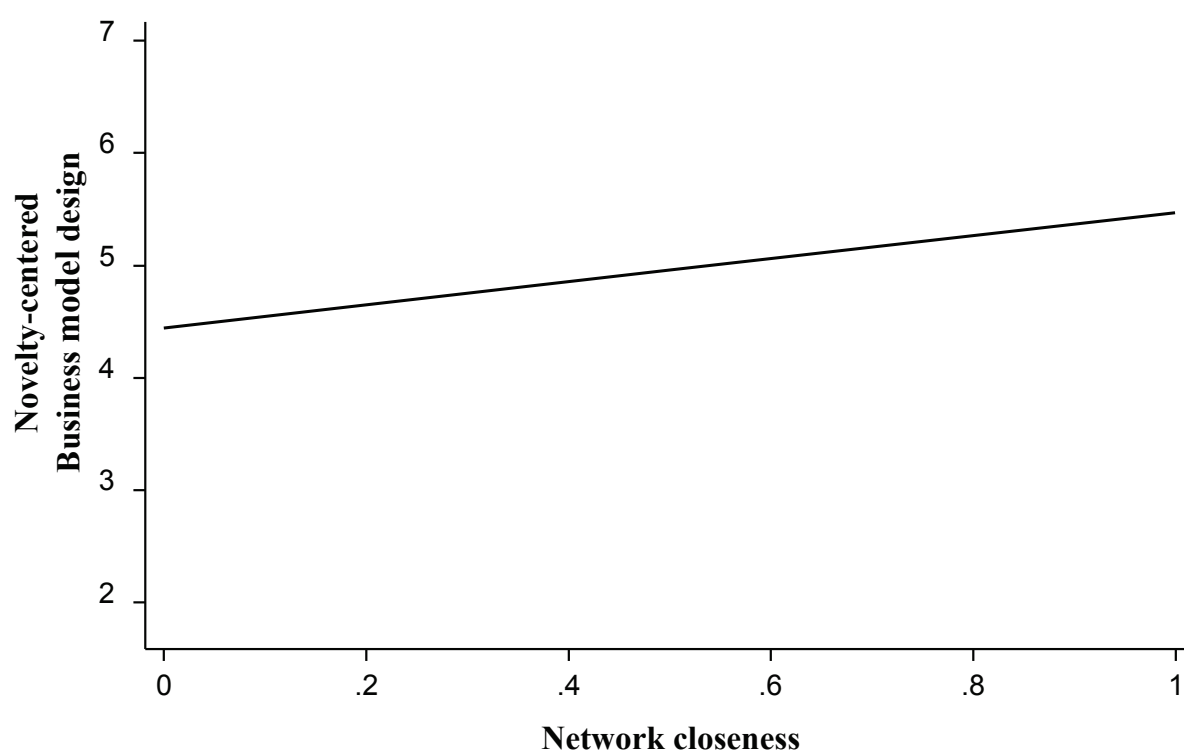


Figure 4: Network closeness and novelty-centered business model design

When the organizational subunits involved in a business model innovation project are themselves connected to one another, they benefit from cohesive networks in terms of trustworthiness, norms and commitment. Additionally, opportunistic behavior is reduced as each partner is more visible, and opportunistic behavior could damage the partner's reputation (Coleman, 1988). As opportunistic behavior usually increases when the level of uncertainty about the future success of the business model

innovation increases and the level of uncertainty increases with the degree of novelty of the business model design, the benefits of cohesive networks increase with the degree of novelty of the business model design.

2.6. Implications, limitations, future research

Our study integrates interesting social capital insights to business model literature and contributes to both research streams, accordingly. Although, research has highlighted the relevance of the “social side” for business model literature (Zott & Amit, 2010), past research has primarily focused on investigating value creation and delivery mechanisms of business models (Björkdahl, 2009; Magretta, 2002; Shafer et al., 2005; Teece, 2010; Zott & Amit, 2010). To our knowledge, this is the first study that goes beyond the transactional dimension of business model innovation and integrates social aspects about the relationships between organizational actors creating novel business models. Our findings reveal that intra-firm network configurations of business model innovation teams have significant effects on novelty-centered business model designs. While tie strength has a U-shaped relationship with novelty-centered business model design, network closure has a positive, linear effect on novelty-centered business model design.

Our findings have several managerial implications. Managers who want to initiate a business model innovation project can use our findings to get a first understanding about the relationship of intra-firm networks and the degree of novelty of the created business model innovation. Furthermore, our findings provide managers a first advice on how to anchor a potential business model innovation project team within the organization that is our results provide a starting point on how close the potential business model innovation project team should interact with other organizational units and how these units should be connected to each other, in order to create novel business models.

We observed three limitations of our study. First, the cross-sectional design of the study inhibited the examination of changes of network configurations throughout the business model innovation process. For early stages of the process, certain configurations of tie strength and network closeness might be more critical for

creating novelty-centered business models than for later stages. Second, the relationships that we discovered on the group level might be due to personal contacts of individuals, which we did not control for. Third, we collected data about past project, which may go along with a retrospective bias of the present results. We tried to countervail this bias by asking only for projects that were completed during the last 18 months.

A fruitful direction for future research would be to examine the effects of intra-firm network configurations over the different stages within a business model innovation project. In early stages of the business model innovation project e.g. in the ideation phase, different levels of tie strength and network closure could be required than at later stages e.g. the design and the implementation phase.

With our study, we address an intra-firm network perspective about the creation of novelty-centered business model innovations. We base our results on empirical findings on various industries. We hope that we would contribute to the “social side” of business model innovation and encourage further studies in this interesting field.

3. Capturing value from business models: the role of formal and informal protection strategies

Co-authored by Karolin Frankenberger, Martin Bader, and Oliver Gassmann

As an overarching concept a business model describes how a firm creates and captures value for itself, its customers, and its partners. Although research has highlighted the importance of value creation and capture of business models, it primarily focused on the value creation mechanisms and neglected aspects of value capturing: Until to date, little is known about how firms attempt to protect their business model innovations from competition, which depicts one aspect of value capturing. Drawing on a sample of 24 cases, we explore how business models relate to IP protection mechanisms for value capture and derive a business model protection framework. Our empirical study reveals that the choice of IP protection is contingent on the applied business model. While razor and blade business models are characterized by both a high degree of formal and informal protection, firms operating with franchising business models put higher emphasis on informal protection strategies. Firms running the pay-per-use business model or the multi-sided platform business model apply both informal as well as formal protection strategies to a medium degree in order to profit from business model innovation. Our findings extend business model literature on novel insights on intellectual property management and also extend the ‘profiting from innovation literature’ on protection mechanisms in the context of business models.

3.1. Introduction

Over the last years business models have raised increasing attention among both researchers and practitioners (Baden-Fuller & Morgan, 2010; Chesbrough, 2007; McGrath, 2010; Zott, Amit, & Massa, 2011). Although several definitions of the term business model exist, researchers agree, that a business model expresses the underlying logic of a firm's business (Teece, 2010; Zott et al., 2011). In previous business model literature aspects of value creation, value delivery, and value capture were highlighted as predominantly important (Björkdahl, 2009; Magretta, 2002; Shafer, Smith, & Linder, 2005; Teece, 2010).

In the past however most literature has primarily focused on the value creation and delivery mechanisms of business models. Value capturing, or put differently, value appropriation mechanisms have widely been neglected (Desyllas & Sako, 2012). This is surprising because it has been found that the adoption of new business models and the business models themselves are becoming to a greater extent part of firms' intellectual property (IP) (Desyllas & Sako, 2012; Rappa, 2001; Rivette & Kline, 2000; Zott et al., 2011), and hence need to be protected similar to any other new technology, product, or service. IP protection strategies act as one instrument of value capturing and have been mainly discussed in the 'profiting from innovation' literature stream (Teece, 1986, 2006), but primarily focus on technological, product and process innovations.

Desyllas & Sako (2012), who examined how IP strategies help to capture value from business model innovation, are an exception. They found that formal IP protection (patents and trademarks) and strategic protection (specialised complementary assets) are complementary and that formal IP protection is especially useful in the early stages of business model innovation while strategic protection is useful to ensure long-term competitiveness. But important questions are left unanswered. Are different business models also associated with different strategies for value capture? Hence, which protection strategy should incumbents that are in the process of innovating their business model follow? Do different configurations of formal and informal protection fit certain business models better than others? These business model value capture questions have not been answered yet in current business model literature.

With this article we examine these questions by investigating different forms of formal and informal protection strategies across four different types of business models, namely the franchising model, the razor and blade model, the pay-per-use, and the multi-sided platform model. Our purpose is to explain how and why different business models influence the relationship between formal and informal protection strategies and value appropriation. In a sample of 24 cases we analyse how firms that successfully apply these business models protect their businesses with formal and informal protection strategies. Subsequently, we derive a business model protection framework for the analysis of IP protection strategies contingent on the application of specific business models. Our findings finally suggest that the logic of different business models calls for different configurations of formal and informal protection to capture value.

This paper contributes to the literature on business models by extending it on elements of IP Management and highlighting the value capture mechanisms contingent on different business models. The paper is structured as follows. Section 2 provides the theoretical background for our analysis by presenting the four examined business models as mentioned above as well as IP protection strategies (formal, informal). Section 3 portrays the empirical setup of the study by illustrating 24 cases and provides details on the methodology conducted for case analysis and the development of the protection framework. In the fourth section we present and discuss the results of our undertaking. The business model protection framework is outlined, which categorizes our sample based on the degree of formal and informal protection. Building on the business model protection framework we subsequently develop four propositions. The contribution closes by discussing the implications for theory and practice as well as the limitations of the study and suggests paths for future research.

3.2. Theoretical background

This section examines the theoretical background for the study, specifically literature on business models and IP protection.

3.2.1. Business models

The construct business model has received growing attention over the last years in both literature and management practice. The business model represents a holistic concept that reflects different components a business comprises and describes how these components are interlinked in order to create value within the business ecosystem and to capture parts of it for the focal firm (Amit & Zott, 2001; Baden-Fuller, Demil, Lecoq, & MacMillan, 2010; Chesbrough & Rosenbloom, 2002; McGrath, 2010). The three components which are named most often as the key elements of a business model are the following: customer value proposition, internal processes, and the revenue model (Baden-Fuller et al., 2010; Doganova & Eyquem-Renault, 2009; Magretta, 2002; Teece, 2010). The first dimension describes the value offering to the target customer or customer segment (Demil & Lecocq, 2010; Teece, 2010), the second dimension refers to the underlying processes and activities and the involved internal resources and external partners (Chesbrough & Rosenbloom, 2002; Zott & Amit, 2007; Zott & Amit, 2008) and the third dimension explains how the firm realizes revenues and profits out of the prior two dimensions (Casadesus-Masanell & Zhu, 2010; Casadesus-Masanell & Zhu, 2013; Chesbrough, 2002). Hence, business models are recognized to describe how firms create, deliver and at the same time capture value for both themselves and their stakeholders in their business ecosystem (Zott et al., 2011).

Most prior research focuses on the value creation and delivery elements of business models (Morris, Schindehutte, & Allen, 2005). Amit & Zott (2001) for example identify four sources of value creation: efficiency, complementarities, lock-in, and novelty. The issue of value capturing has remained relatively underexplored. However, it is fundamental to the profitability of firms (Lepak, Smith, & Taylor, 2007; Priem, 2007) and it is especially important in the realm of business models due to two reasons. First, business models are increasingly becoming part of firms' intellectual property (Desyllas & Sako, 2012; Zott et al., 2011) and thus need to be

protected. Second, as the locus of value creation of business models often spans firm and industry boundaries (Amit & Zott, 2001), it becomes crucial to understand the mechanism how to capture value for the individual firm.

Recent studies in the business model literature have started to address this interesting topic. Casadesus-Masanell & Zhu (2013) analyse the relationship between business model innovation and imitation. They argue that entrants with new business models need to decide if they reveal their innovation, thus facing the risk that incumbents adapt the business model, or hide the innovation by adopting conventional business models. While Casadesus-Masanell & Zhu (2013) rather focus on strategic interactions between different market players, Desyllas & Sako (2012) go one step further and explicitly address the topic of business model protection. Based on the profiting from innovation framework (Chesbrough, Birkinshaw, & Teubal, 2006; Teece, 1986, 2006) they show that formal IP protection methods and strategic ones complement one another. While formal IP rights are useful as short-term defensive strategies, only strengthening specialised complementary assets can ensure long term value capturing.

Due to the complexity and wide variety of business models, which are currently employed by firms, many researchers have focused on a specific subset of business models in order to ease the analysis. Casadesus-Masanell & Zhu (2013) for example focus on business models, which allow the firm to monetize its products through sponsors. Desyllas & Sako, (2012) focus on the pay-as-you-drive business model in the insurance industry. In this paper, we will portray the franchising, the razor and blade, the pay-per-use and the multi-sided platform business model in the following sections. We do not claim, that these four business models represent a complete typology of all business models that firms could possibly run. Our intention is to rather understand how specific business models are characterized by formal and informal protection strategies and, in line with the studies mentioned above, exemplify this on the basis of a subset of well-known ones. We selected those four business models due to the following: First, they have been the focus of various research endeavors in the past (Caves & Murphy, 1976; Norton, 1988; Johnson, 2010; Teece, 2010; Hagi, 2009; Postmus, Wijngaard, & Wortmann, 2007;), second they are well-known in management practice (Brickley & Dark, 1987; Johnson, 2010; Eisenmann, Parker, & Alstyne, 2006; Jiang, Chen, & Mukhopadhyay, 2007), and third, they are

applicable in different industries (Lafontaine, 1992; McGrath, 2010; Evans, 2003; Rochet & Tirole, 2003; Kim, 2005).

Franchising

The franchising business model describes the business logic, “in which the owner of a protected trade-mark grants to another person or firm, for some consideration, the right to operate under this trademark for the purpose of producing or distributing a product or service” (Caves & Murphy, 1976, p. 572). Thereby the franchisor has the authority to monitor the franchisee for product/service quality and the maintenance of the trademark (Brickley & Dark, 1987; Norton, 1988). The franchisee operates for his own account but is often obliged to pay royalties to the franchisor; e.g. with a share of his sales, or a share of the purchases that have to be made from the franchisor (Lafontaine, 1992). Successful franchising firms are found in various industries such as fashion (Tom Tailor), fast food (McDonalds), and grocery (avec).

Razor and Blade

The razor and blade business model follows a cross-subsidization logic. Companies operating this model give certain components of their business away for free or sell it below market price in order to generate high margins on the complementary products, which are aggressively marked up (Johnson, 2010; McGrath, 2010; Teece, 2010). To benefit from this business model as a company, it is necessary to create exit barriers for customers and to protect the complementary products from competition and especially imitation. Prominent examples for a successful application of the razor and blade model are the razor firms like Gillette that sell the blades for their shavers at a high price or the ink-jet printer manufacturers like HP who sell the printers relatively low priced and generate high profits with the frequently repurchased cartridges.

Multi-sided platform

In this business model at least two distinct groups of users interact on the platform of a third party (Hagiu, 2009). These user groups are affected by indirect network effects, which means that the attractiveness of the platform increases for one group of users as more members of the other group join – and vice versa (Evans, 2003). Put

differently, “the platform’s value to any given user largely depends on the number of users on the network’s other side” (Eisenmann, Parker, & Alstyne, 2006, p. 2). In order to bring a multi-sided platform to life, a key challenge for the platform owner is to deal with the ‘chicken and egg problem’ and to ensure getting both parties ‘on board’ (Rochet & Tirole, 2003). Successful examples of firms running the multi-sided platform business model are credit card companies like VISA who connect shoppers with retailers or gaming companies like Nintendo, that act as a multisided platforms, since they connect game developers with game players.

Pay-per-use

Companies running the pay-per-use business model differ from others by billing the customer solely usage-based (Postmus, Wijngaard, & Wortmann, 2007). Thereby, the customer does not pay any fixed fees periodically or is confronted with initial upfront costs (Jiang, Chen, & Mukhopadhyay, 2007). He is only charged variably based on his actual usage (Kim, 2005). That is, the vendor takes a risk and sets aside one pricing option, namely the basic fee in the hope to earn higher profits by charging variably per use. Examples of successful firms operating with the pay-per-use business model are found in the video on demand industry (Swisscom, Deutsche Telekom, Cablecom etc.), in which providers offer customers an online video library and charge a certain amount at the end of the month per movie viewed. Another example illustrates the pay-per-click model in the field of online marketing. Advertisers do not pay for advertisements as such, but are charged based on how often the advertisement is clicked at by Internet users. This model is the most dominant online advertising concept and is offered e.g. by Google, Microsoft Bing and Yahoo etc..

3.2.2. IP protection strategies

As mentioned above mechanisms for value capture have been neglected so far in prior business model literature. One aspect of capturing value from new business models is using IP protection strategies to protect the business model from imitation and value slippage. The protection of IP is much debated in the economic context by various researchers especially with a focus on product and process innovation (Cohen, Nelson, & Walsh, 2000; Dosi, Marengo, & Pasquali, 2006; Harabi, 1995). Teece, (1986, 2006)

was the first to examine the mechanisms of value capturing in the context of innovation. In his groundbreaking and highly influential work he suggests, that capturing value (e.g. profits) from innovation is highly contingent on the appropriability regime surrounding the innovator, specifically on the efficacy of formal (e.g. patents, copyrights) as well as informal (e.g. trade secrets) IP protection and the type of technology (e.g. product, process, tacit, codified). However, he explained the value capturing mechanisms only in the context of technological innovation. Subsequent researchers broadened the context and also included product and process innovation. Amara, Landry, & Traoré (2008) for example investigate how knowledge-intensive business service firms protect their inventions and find that informal as well as formal protection strategies are jointly used. Furthermore, they find that the mechanisms of formal and informal IP protection are characterized by a strong interdependency and mutual reinforcement so that innovations are protected from imitations of rivals. In general, the findings outline that formal and informal protection mechanism complement one another and are both critical for capturing value from innovation (Arora & Ceccagnoli, 2006; Cohen et al., 2000; Dosi et al., 2006; Hall & Ziedonis, 2001; McGahan & Silverman, 2006; Pisano, 2006).

While almost all researchers in this field distinguish between formal and informal protection strategies, the majority has so far limited their research on patenting and secrecy strategies thereby ignoring other forms of formal and informal protection strategies (Anton, Yao, & Anton, 2004; Arundel, 2001; Hussinger, 2006). Gallié & Legros (2012) are one of the exceptions. They distinguish between seven forms of formal and informal protection strategies and show with a sample of French firms that the choice of protection strategy depends on various factors such as the type of innovation, the size and the market share of the firm, and its R&D activities. They distinguish between the following protection strategies – patents, design rights, trademarks and copyrights as formal protection strategies and trade secrets, complexity of products and manufacturing process, and lead-time advantage as informal protection mechanism. More specifically, they define the mechanisms as follows.

Formal IP strategies

(i) *Patents:* An inventor, who registers a patent, receives the right to prohibit the imitation or use (own use or selling it) of his invention by others for a limited time. This allows the inventor to realize monopolistic prices when exploiting the innovation. However when registering a patent the inventor must disclose the information around the innovation and hence enables competitors to ‘invent around’ the patent. This drawback could overshadow the benefits of realizing monopolistic prices for the innovation.

(ii) *Design rights:* Design rights protect the visual appearance of objects such as the shape, the colors, and the materials. In order to register a design two requirements have to be fulfilled. It has to be new, which means that no identical design was published prior to registration. Secondly it has to be unique, which means that the overall appearance must differ from other designs.

(iii) *Trademarks:* A trademark is a sign, a symbol, a design or expression, which distinguishes products or services of a company from the ones of other companies. Although a trademark is not limited in time the registering company needs to periodically renew it.

(iv) *Copyrights:* A firm which registers a copyright receives exclusive rights for an original work and hence obtains the power to determine who may financially benefit from it.

Informal IP strategies

(i) *Trade secrets:* Trade secrets cover non-public information and enable firms to obtain competitive advantage over companies that do not own the information. This includes formulas, methods, techniques, processes, and instruments. Firms have to take action to maintain secrecy about the information.

(ii) *Complexity of products and manufacturing processes:* The complexity of products and manufacturing processes depicts an instrument to capture value from innovation. If a product or service consists of complex processes, technologies or components that are necessary to build and distribute it, this complexity grants the firm a competitive advantage, since the offerings more difficult to imitate.

(iii) *Lead-time advantage*: In our context, lead-time advantage is established if firms innovate faster than their competitors. This leads to competitive advantages, which enable them to capture value from their innovation.

In this paper we build on this study and include the identified seven mechanisms identified by Gallié & Legros (2012). This allows us to embrace the most comprehensive set of IP strategies found in past empirical studies as a starting point of our study and to better understand their influence on value appropriation for different business models.

3.3. Methodology

3.3.1. Case study approach

As the previous sections show, the interdependencies between IP protection strategies and business models is a so far understudied area of potentially high theoretical and practical relevance. The value capture mechanisms of business models from an IP perspective have rarely been studied nor conceptualized yet. Due to the lack of prior theorizing about this topic we employed an inductive multiple case study approach (Eisenhardt, 1989; Yin, 2003). To comply with the aim of our study, namely to explore the role of formal and informal IP strategies for value appropriation across four specific business models, we employed a purposeful sampling procedure, which in comparison to selecting cases randomly allowed us to access information-rich cases from which we could discover “a great deal about issues of central importance to the purpose of the evaluation” (Patton, 1987, p. 52).

The cases were selected by the following criteria: First, our case sample should consist of firms that conduct a business model, which classifies as one of the investigated ones, namely either the franchise model, the razor and blade model, the pay-per-use model, or the multi-sided platform model. While it was obvious when to classify a case as to run a franchise model, we assigned a case to the razor & blade model if the case firm attracted customers with a low-priced basic product, which required the customers to buy high margined complementary products repeatedly. Firms were classified to the pay-per-use model, if they billed their customers solely usage-based, which means that the customers had no fixed fees to pay periodically or

per item, but were only charged based on the actual usage of the firm's offering. Finally, firms were assigned to run a multi-sided platform business model, when they connected at least two distinct groups of users to interact on their platform. Second, the overall composition of companies per business model should be as broad as possible – in terms of industry and field of business. This principle aimed at ensuring generalizability of the results for the business model. Consequently, we included six companies per business model into the research sample, which mostly operated in different industries. Third, the selected companies should be successful with their business model and especially with value appropriation. This means they should earn substantial revenues and make profit with the business model.

We identified 24 cases that met those criteria. We chose six firms per business model. The identified firms are mostly market leaders in their industry and therefore 'typical cases' (Miles & Huberman, 1994) for each business model. The following list describes our research sample:

Table 3: Research sample and case description

Case	Business Model, Business Description
1. Fast food	<i>Business Model:</i> Franchising <i>Description:</i> As a large multinational restaurant chain, this company focuses on serving fast food meals such as hamburgers, french fries and soft drinks. The individual restaurants are operated by franchisees who receive all the necessary ingredients and equipment to run their business. In return for using the company's trademark and know-how, franchisees are required to pay part of their revenue as a royalty fee to the franchisor.
2. Elderly care	<i>Business Model:</i> Franchising <i>Description:</i> In order to support aging in place, this company provides non-medical in-home care for seniors. Its concept of elderly care can easily be transferred to locations in need of such services by allowing franchisees to adapt the company's business model. The company generates revenues with franchising fees.
3. Fashion	<i>Business Model:</i> Franchising <i>Description:</i> This clothing company provides apparel and fashion accessories for men and women. As a franchisor, it allows entrepreneurs to open new stores under its brand name. The company is compensated by receiving a fee from its franchisees.
4. Restaurant	<i>Business Model:</i> Franchising <i>Description:</i> In contrast to fast food franchises, this restaurant

chain offers fresh and house-made Italian dishes that are cooked individually according to customer preferences. The concept was adopted in more than 70 locations around the world. It is intended to grow even further by allowing franchisees to open new restaurants.

5. Grocery

Business Model: Franchising
Description: This retail company is based in Switzerland and offers a broad variety of consumer goods. Franchisees are authorized to use the company's business model and open their own store. In return, franchisees are obliged to pay a royalty fee based on their revenues.
6. Association

Business Model: Franchising
Description: As a national franchising association, this organization aims at supporting franchisors and franchisees in their respective domain. After these firms applied for membership, their business models will be screened. When accepted, they're required to pay a small fee and are then granted access to the services provided by the franchising association.
7. Safety razors

Business Model: Razor & Blades
Description: Being a well-renowned corporation in the personal care industry, this company is specialized in commercializing safety razors for men. It sells both razors and razor blades. Whereas the razors are typically offered at a relatively low price, the razor blades are priced much higher. In essence, most of the revenue is generated by the sales of complementary products.
8. Printing devices

Business Model: Razor & Blades
Description: This American multinational company is one of world's leading technology corporations. Amongst other products, it supplies a broad variety of printing devices. Thereof, the prices of ink-jets printers are proportionately low. Profit arises primarily from the sales of repurchased cartridges.
9. Coffee capsules

Business Model: Razor & Blades
Description: The market for coffee is generally highly competitive. This company was one of the first corporations to offer its coffee pre-apportioned in capsules. In comparison to conventional coffee, the capsules allowed for much higher profit margins. This way, the coffee machines could be subsidized and sold at lower prices in order to attract potential customers.
10. Tooth care

Business Model: Razor & Blades
Description: This company is a leading supplier of dental hygiene products such as toothbrushes, dental floss or dental sticks. Most of the company's revenue is not generated by its electrical toothbrushes, but by the toothbrush heads. These toothbrush heads need to be replaced regularly and thus lead to a steady income stream.

11. Electronics *Business Model: Razor & Blades*
Description: The increasing popularity of e-books led one of the largest electronic commerce corporations to adapt the concept of 'razor & blades'. The company offers its e-book readers at a comparably low price. Profit is primarily generated with e-books that can be downloaded and installed on the reader.
12. Music *Business Model: Razor & Blades*
Description: For many decades, this company was predominantly present in the software and hardware industry. It recently launched a platform for distributing music online. The company's mp3-players are sold at moderate prices. The songs, which can be downloaded from the online platform for a small fee, complement the revenues generated by the sales of hardware.
13. Car Sharing *Business Model: Pay-per-use*
Description: The purchase of a new car is generally associated with significant expenses for the customer. To ease financial hurdles in the private transportation industry, this company provides a car sharing service. Customers can use the company's cars and are charged based on the usage of the vehicles.
14. Online Marketing *Business Model: Pay-per-use*
Description: This company provides advertising services on the internet. Firms can sign up on the website and start a campaign. Compared to other means for advertising, they pay per click. Hence, firms are only charged for ads that were actually successful in attracting new customers.
15. Healthcare *Business Model: Pay-per-use*
Description: Being one of world's leading electronics company in the world, this multinational corporation launched a pay-per-use service in order to support firms in the healthcare industry. Based on its vast experience, the corporation is able to provide business assessments and technology recommendations. These healthcare solutions are charged on a pay-per-use basis.
16. Telco *Business Model: Pay-per-use*
Description: This company is major telecommunications provider in Switzerland. It recently launched a cloud computing service on its website, allowing customers to store their files online while being billed on a pay-per-use basis.
17. Video On Demand *Business Model: Pay-per-use*
Description: As one of Germany's leading television stations, this company introduced a video on demand service to complement its traditional TV broadcasting. Based on the pay-per-use concept, customers are only charged for movies they actually watch.
18. Hotel *Business Model: Pay-per-use*
Description: Whereas many holiday accommodations only provide conventional television, this hotel offers its customers a video on demand service. All rooms are equipped with a flatscreen TVs allowing guests to choose from a broad variety of movies and

series. These movies are accessible for a small fee that will be billed at the end of the stay.

19. Gaming
Business Model: Multisided Platform
Description: This company is a multinational manufacturer of consumer electronics, most notably known for its video game consoles. Its business model benefits as the number of gamers and video game publishers increase. With more available video games, the console becomes more appealing to gamers. On the other hand, a console with a high player base is profitable for video game publishers and thus entails the production of more video games.
20. Newspaper
Business Model: Multisided Platform
Description: By offering a daily newspaper for free, this company created a multisided platform in the publishing industry. With an increasing readership, the newspaper becomes more attracting for advertisers. This enables the company to generate more revenue and potentially provide better content which – in turn – can lead to a larger readership.
21. Couponing
Business Model: Multisided Platform
Description: This company's business model is based on a website providing customers the opportunity to buy products at highly discounted prices. The products are sold by companies who are interested in using this multisided platform for customer acquisition. This creates a win-win-situation for all parties involved.
22. Couponing
Business Model: Multisided Platform
Description: Hosting one of world's leading couponing website, this company offers products and services at much lower prices than they would usually be available. While this is an effective way for companies to commercialize their products, customers profit from lower expenses. The couponing website on the other hand receives a premium for featuring other company's products.
23. Credit card
Business Model: Multisided Platform
Description: As a large multinational financial services corporation, this company is best known for offering electronic funds transfers via credit and debit card. As a multisided platform, it helps other companies and its customers to process their payment transactions.
24. Online payments
Business Model: Multisided Platform
Description: This company provides payment and money transfers on the internet. It facilitates financial transactions for both companies and customers by offering an alternative to traditional payment methods. Profit arises from fees on every payment made.
-

3.3.2. Data collection

We collected data from three sources. First, we interviewed a total of 24 senior managers from the respective firms. The experts contacted should have deep insights into the area of interest in order to be able to structure the concrete field of action logically and precisely. Consequently, we identified interviewees who held management positions in their respective firms and whose daily business is located between management and strategy. The interviews were conducted semi-structured and had the character of ‘guided conversations’ (Yin, 2003). The semi-open design was chosen in line with the intention of the study to break new ground and gain valuable insights into the relationships of protection strategies and business models. Conducting semi-structured interviews allows on the one hand for in-depth questions where strict questionnaires do not discover further details if necessary. On the other hand, the interviewer is able to shorten to detailed questions if no more knowledge of the expert’s side can be reached. However it provides still enough structure ensuring comparability of the cases (Mack, Woodson, MacQueen, Guest, & Namey, 2005). The interviewees received our questions in advance so that they could prepare appropriately. Subsequently we conducted the interviews, which took between 1.5-2 hours per interview. The interview guide included an introduction of the topic, the aim of the study, a mix of open and closed questions around their respective business model and which formal as well as informal IP strategies the firms applied to protect their business.

Second, we collected additional archival data, such as press releases, published documentations and presentations, which enhanced our understanding of the strategies the selected firms executed (Rowley, 2002).

Third, we visited the Swiss Federal Institute of Intellectual Property due to following reasons. First, during the one day visit we were granted deep access to how Intellectual Property titles (e.g. patents, trademarks, designs, and business methods) are examined, granted and administered by receiving lectures from senior patent experts as well as through observations of their daily work. During that time, we held numerous informal conversations, took notes of our observations and wrote them down. Second, we received expert guidance while searching for IP titles that our relevant firms registered worldwide. Third, the visit helped us to better understand the relationships of the registered titles to their business models; specifically how these

titles add to the protection the firms' business models. Fourth, the visit enabled us to attain valuable insights on patent disputes of our case companies and the respective court decision. This helped us to better understand the protection strength of various titles.

The data collection was supported by MBA students, who were trained in the topics of business models and IP management and were accompanied and coached during the phase of data collection (Zott & Amit, 2007; Zott & Amit, 2008).

As qualitative case study research is often biased we took several steps to achieve trustworthiness with our study. In line with Lincoln & Guba (1985) we focused on three criteria: credibility, dependability and transferability. Credibility, the findings fit with reality, was ensured by comparing the interview results with the collected secondary data. In all cases we found a strong fit between what the interviewees said and what we found in other sources. 'Triangulating' of our findings (Jick, 1979) by using different data sources (interviews, informal conversations, observations, publically available documents and presentations) made us confident in reaching the necessary credibility for our research goal. Dependability, the consistency of the findings, was ensured by focused interviews and the selection of interview partners, who have deep insights about their business model. Finally, transferability, which corresponds to internal validity, reliability and external validity was ensured by comparing our findings with a broad set of previous findings in adjacent literature (Eisenhardt, 1989). Further, we increased transferability through including various industries in our sample.

3.3.3. Data analysis and rating matrix

In order to analyze the collected qualitative data we transcribed the recorded interviews first verbatim (Corbin & Strauss, 2008). Then we wrote case stories for each business model and for each firm. Afterwards we coded the data in two rounds. First, in line with our theory part, we build on the seven identified formal and informal IP protection mechanisms from Gallié & Legros (2012), namely patents, trademarks, designs, copyrights, trade-secrets, complexity of products or manufacturing processes, and lead-time advantage. Reading through the interviews and the case stories allowed us to identify themes and topics that we assigned to the existing labels. Second, during

the coding we observed that additional themes exist, which did not fit the existing codes. The reason for this could be the following. Gallié & Legros (2012) on the one hand, offered the most comprehensive set of protection mechanisms in past empirical studies. On the other hand they have tested these mechanisms only in the context of the Community Innovation Survey (CIS4), which addressed only four innovation types. In specific, these types were a) product (physical good or service) innovation, b) innovation in the production or manufacturing processes of good or services (production-method innovation), c) innovation in the methods of logistics, supply or distribution of raw materials, goods or services, d) innovation in support activities, such as maintenance, purchasing or accountancy. The field of business model innovation has been left out. It seems like the traditional IP instruments are not sufficient to fully explain the protection of business models. As business models take a rather holistic view on the firm's business it seems that further informal strategies are gaining importance, which are not captured in the existing instruments. Therefore, we created additional codes until we felt that we had achieved theoretical saturation (Glaser & Strauss 1967), that is that the creation of additional codes, would not lead to further theoretical refinement. In total, eight further codes were created, which are all characterized as informal IP instruments or complementary assets. We labeled them as strong brand, qualified employees, strong partner network, loyal customers, value chain control, strong distribution channels, superior pricing, and quasi monopolies (see upper right side of Table 4). Topics and themes that fitted to the new created codes were assigned accordingly. Through the coding we identified similarities across the cases and developed initial relationships between the constructs. We then iterated going back and forth between original data, initial findings, and literature until we achieved a coherent picture.

Subsequently, for each firm we rated the extent to which each IP strategy was used by the firm for business model protection. In order to do so, we used a rating on a four-point scale anchored at 'not at all used' and 'strongly used'. The measure was rated by the first two authors independently for each of the 15 protection strategies and for each of the 24 cases. Differences in ratings on the 4-point type scale initially occurred for some cases. We resolved these differences by joint discussions and by re-examining the case data (Bullock, 1986). Such a rater approach is quite common in research (Frankenberger, Weiblen, & Gassmann, 2013; Keupp, Palmié, & Gassmann,

2011; Nag, Hambrick, & Chen, 2007; Zott & Amit, 2007; Zott & Amit, 2008). Subsequently, we added the values for formal and for informal protection strategies for each case to arrive at a case measure for the relevance of formal and informal protection strategies. Finally, we calculated the average of the values for each business model category to compare across business models.

3.4. Results

Table 4 shows the results of our analysis. The crosses display the ratings for each protection strategy and for each case. Empty cells in the table stand for a '0' rating or no usage of the IP strategy and cells marked with xxx '3' stand for a strong usage of the IP strategy. The numbers show the calculated averages for the relevance of formal and informal protection strategies for each case and for each business model.

Table 4 shows that all firms investigated take advantage of various protection instruments, which are of both types, formal as well as informal. Second, our results show that cases operating the same business model show similar configurations of formal and informal protection mechanisms applied. Firms operating the razor and blade business model are characterized by the extensive use of formal as well as informal protection instruments – displayed by high values in both categories - 10.8 for formal and 24.2 for informal protection. Franchising firms only partially make use of formal protection instruments (4.5) and pay higher attention to informal instruments like qualified and motivated employees (21.6).

For firms, which apply the pay-per-use business model, we observed a medium level of use both for informal (15) and formal protection (3.8) strategies. Similar to the pay-per-use business model also firms who operate multi-sided platform business models show a medium degree of informal protection (12.3) and a medium degree of formal protection (5.2). Relying solely on formal protection strategies seems unattractive for all firms of our sample.

Table 4: Overview of IP protection and rating matrix

Case.	Business model	Formal IP protection			Summary formal IP protection		Informal IP protection / complementary assets											Summary informal IP protection		
		Patents	Trademarks	Designs	Copyrights	Case degree	Average value per business model	Trade secrets	Complexity of products or manufacturing processes	Lead-time advantage	Strong brand	Qualified employees	Strong partner network	Loyal customers	Value chain control	Strong distribution channels	Superior pricing	Quasi-monopoly	Case degree	Average value per business model
1 Fast food	Franchising		xxx	x	x	5			x	xxx	xxx	xxx	xxx	xxx	xxx	xx	x	24		
2 Elderly care	Franchising		xx		xx	4	x	x	x	xxx	xxx	xxx	xxx	xxx	xxx	x		21	21.6	
3 Fashion	Franchising		xxx		xx	5		x	xxx	xxx	xxx	xxx	xxx	xxx	xxx	x		21		
4 Restaurant	Franchising		xxx	x	x	5	x	x	xx	xxx	xxx	xxx	xxx	xxx	xxx	x		22		
5 Grocery	Franchising		xxx		x	4	x	xx	x	xxx	xxx	xxx	xxx	xxx	xxx			22		
6 Association	Franchising		xxx	x		4		x	x	xxx	xxx	xxx	xxx	xxx	xxx	x		20		
7 Safety razors	Razor&Blade	xxx	xxx	xxx	xx	11	xx	x	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx		26		
8 Printing devices	Razor&Blade	xxx	xxx	xx	xx	10	x	x	xx	xxx	xxx	xxx	xxx	xxx	xxx	xx		24		
9 Coffee capsules	Razor&Blade	xxx	xxx	xxx	xxx	12	xx	x	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx		25	24.2	
10 Tooth care	Razor&Blade	xxx	xx	xxx	x	9	x	x	xxx	x	xxx	xxx	xxx	xxx	xxx	xx		22		
11 Electronics	Razor&Blade	xxx	xxx	xxx	xx	11	xx	x	xxx	x	xxx	xxx	xxx	xxx	xxx	xx		24		
12 Music	Razor&Blade	xxx	xxx	xxx	xxx	12	xx	x	xxx	x	xxx	xxx	xxx	xxx	xxx	xx		24		
13 Car sharing	Pay-per-use	xx	xx			4			xxx	xx	xxx	xx	xxx		xxx			17		
14 Online Marketing	Pay-per-use	x	xx	x		4		xx	xx	x	xxx	xxx	xx	x	xxx			14		
15 Healthcare	Pay-per-use	xx	xx	x		5		xx	xxx	x	xxx	x	xxx		xxx			17		
16 Telco	Pay-per-use		xx	x		3			xxx	xxx	xxx	xxx	xxx		xx			14		
17 Video on demand	Pay-per-use		xx	x	x	4			xxx	xxx	xx	xxx	xxx		xx			13		
18 Hotel	Pay-per-use		xx	x		3			xxx	xxx	xxx	xxx	xxx		xxx	xxx		15		
19 Gaming	Multi-sided platform		xx	xx	x	5				xxx	xx	xx	xx	xx	xx	x		15		
20 Newspaper	Multi-sided platform		xx		xxx	5				x	xx	xx	xxx	xxx	xxx	xx		11		
21 Couponing	Multi-sided platform		xx	x	xx	5				x	xx	xxx	xxx	xx	xx	xxx	x	12		
22 Couponing	Multi-sided platform		xx		xx	4					xx	xxx	xxx	xx	xx	xx	x	10		
23 Credit card	Multi-sided platform	xx	xx	x	x	6		xx			xxx	xxx	xx		xxx	xx	xx	14		
24 Online payments	Multi-sided platform	xx	xx	x	x	6		xx		xx	xxx	xxx	xx		xxx	xxx	xx	12		

To better understand the results we developed a business model protection framework, which allows identifying the level of formal and informal protection strategy required for each business model type in order to capture value. We chose a four-field matrix to portray the firms' positions (Figure 5) and set the borders of the fields according to the averages across all cases, which enabled us to reveal the relatively high or low use of formal and informal protection instruments. The levels 0 to 5 of the degree of formal protection are classified into the fields B and C, the levels 6 and higher to the fields of A and D. Correspondingly, the fields C and D include the levels 0 to 18 of the degree of informal protection, while the levels 19 and higher are represented by fields B and A. The four-field matrix is portrayed in Figure 5.

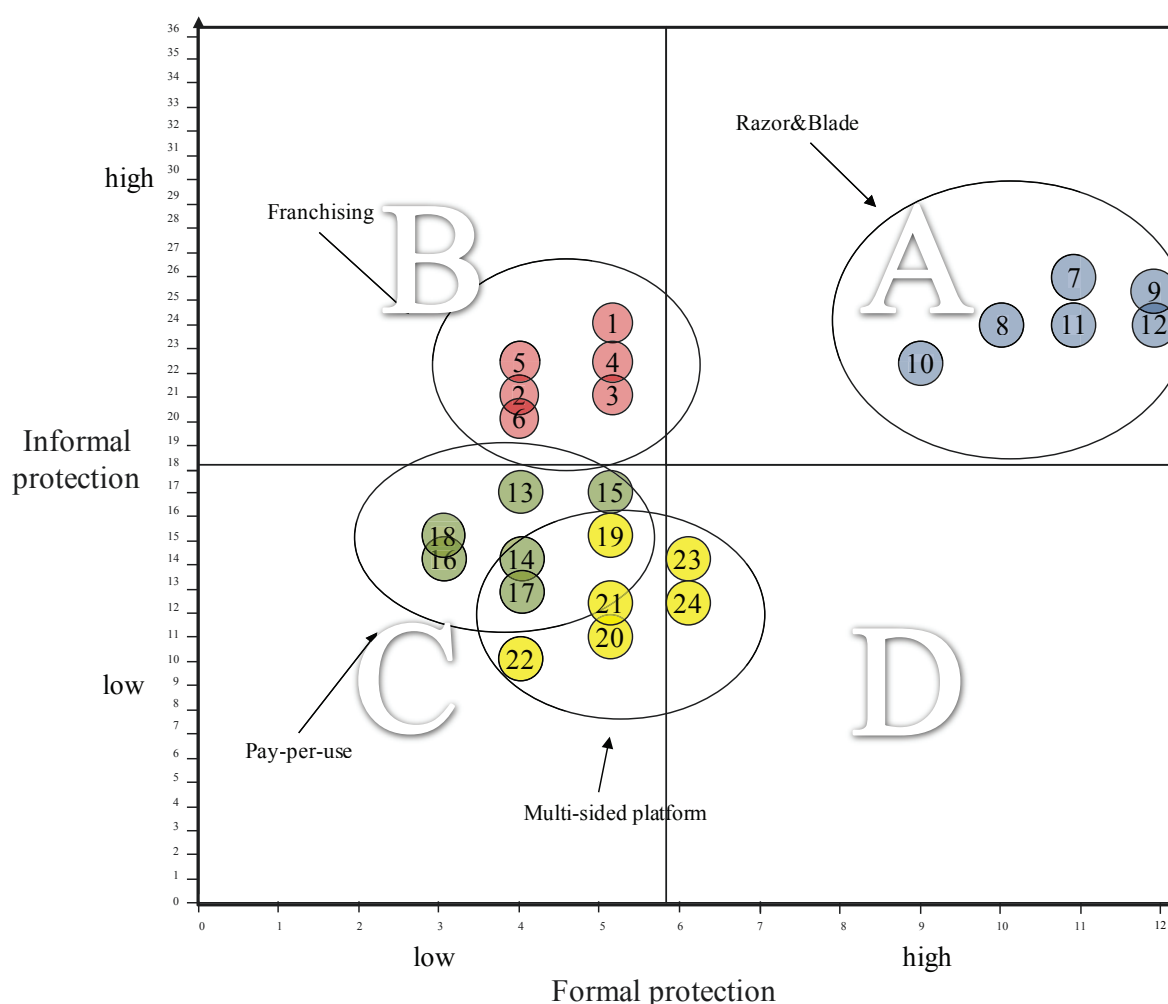


Figure 5: Business model protection framework

3.4.1. Razor and Blade and IP protection strategies

Firms choosing a razor and blade model make high use of both formal as well as informal instruments. They are characterized by a very dominant and partially aggressive appearance on the market. The razor and blade manufacturer (case 7) for example continuously further develops its technologies and registers patents for any small progress of their technology. Examples include all technical details of the blade, such as the composition of the strips, the positioning of the blades, and the angle of the razor blade touching the skin. It owns more than 13.000 patents, 5.130 of which in the category B26B21 ('Razors of the open or knife type; Hair-trimming devices involving a razor-blade') and 734 in the category B26B19 ('Clippers or shavers operating with a plurality of cutting edges, e.g. hair clippers, dry shavers') (European Patent Office 2012). That is, more than half of all patents are related to razors and blades. Taking a closer look, more than 50 patents, several design rights, and trademarks are assigned only to one razor (Aoki, 2003).

However the razor and blade manufacturer does not only focus on formal protection mechanisms, as outlined in the following statement from one expert: *"It is important, that [company name] continuously launches new, innovative, and better products, which replace the prior models before their patents expire."* Therefore the razor and blade manufacturer also pays strong attention to informal protection mechanisms like 'pioneering' and invests heavily in R&D as well as consumer insights. An additional informal protection mechanism exists in the form of brand image. Being one of the world's most valuable brands (Interbrand 2012), the firm's brand image gives men the confidence to being able to reach everything in life they want.

A second example for razor and blade business models is represented by the inkjet printer company (case 8), which owns more than 37.000 active patents and represents one of the largest patent portfolios worldwide (Swiss Federal Institute of IP 2012). Like the prior firm, case 8 registered most of its patents to the razor and blade business model related products, in its case the ink printer technologies. Informal protection instruments of case 8 comprise the loss of warranty of the printers in the case of refilling cartridges from third party providers as well as means to increase customer loyalty by integrating 'smart chips' into cartridges, which monitor the ink level and encourage the consumer to replace the cartridges prematurely before running out of ink.

The coffee machine and capsules manufacturer (case 9) uses formal protection instruments actively to keep competitors out of the market by prosecuting imitators of capsules aggressively. With a similar effort case 9 also uses informal protection strategies such as the creation of a ‘Super Premium Brand’ in order to increase customer loyalty. With its boutique shops and its extraordinary trained employees as well as celebrity advertisement, case 9 delivers its customers the impression of being part of an exclusive club. Not only does this strategy enhance the business models lock-in effect, it also lowers the entry barriers for non-customers.

In summary, we argue that for razor and blade business models firms employ a high level of formal and informal IP strategies in order to capture the value of this business model:

Proposition 1: Razor and blade business models are characterized by the usage of a high level of formal and informal protection strategies to capture value.

3.4.2. Franchising and IP protection strategies

Business models, which follow the franchising model, use informal protection strategies to a great extent and do not highly focus on formal protection strategies. The burger franchise chain (case 1) hardly makes use of patents, which is underlined by a quote of our informant of case 1: *“We have the equipment and suppliers just as others may have, anyone could imitate the burgers. The competitors respect our experience. Everything has to come together at the right time and there is huge machinery behind.”* This statement is in line with the remaining franchising firms. They appear to focus on building informal protection and complementary assets instead of relying solely on patented products, processes or services. Indeed, most firms, which apply a franchising business model, did mention that formal protection strategies are only important for their business model to protect their strong brands (informal protection) by the use of trademarks (formal protection). These statements reflect the logic of the franchising business model. Customers associate a certain quality of products or services with a brand. Therefore building strong brands (informal protection) and protecting them by the use of trademarks (formal protection) helps franchisors to exploit their business idea faster and in different territories through the franchisees by attracting customers who rely on the same level of quality worldwide.

Besides building a strong brand there are two additional informal protection strategies, which seem to be of notable importance. Firstly, strong distribution channels appeared to play a crucial role for capturing value from the franchising business model, also because most franchising firms operate in the retail sector and franchising products often are standardized and not technically sophisticated. For the grocery stores of case 9 the location as part of the distribution channel is most important. In the grocery industry the same or very similar products are available in different chains, which make grocery stores partially substitutable. Therefore spatial closeness plays an important role. As a result case 9 tries to rent store space especially on high frequented places such as train stations, which add quasi-monopoly advantages as our informant mentions: *“As the case may be, also the renter mix is protected, that is not an infinite number of identical stores is allowed to be opened in one train station.”* The second informal protection strategy, which is of high importance for firms applying the franchising business model, is illustrated by qualified employees. Qualified employees are an important differentiation feature and especially for firms who are not able to differ from the competition through high-tech products. Here, the service character of employees in the franchise stores receives much higher attention. This is why franchisees often have to go through a detailed selection process in order to receive licenses from the franchisors.

As a result we argue that for franchising business models a high level of informal protection and a medium level of formal protection strategies lead to superior value capture. Formally:

Proposition 2: Franchising business models are characterized by the usage of a high level of informal and a medium level of formal protection strategies to capture value.

3.4.3. Pay-per-use and IP protection strategies

Firms pursuing a pay-per-use business model are characterized by a medium use of informal protection instruments and a medium use of formal protection.

The car sharing company (case 13) states that it is almost impossible to protect its business model. Their customers are usually also customers of competitors and vice versa, as outlined in the following quote: *“For car sharing customers it is only*

important to get to a vehicle as fast as possible and located as close as possible, it does not matter if it's one of ours or a competitor's one." As the car-sharing concept is a very young and fast growing concept it seems that the players on the market profit from each other, as they are currently complementing one another. If a customer signs up for one car sharing provider, the likelihood of registering at another provider in the same area rises; because he wants to have access to as many vehicles as possible in the region to stay mobile.

This makes protection difficult. But even for such 'open' and young business models, which are difficult to protect, we observed protection attempts of the respective firms. The car sharing company usually negotiates parking possibilities throughout the city with city representatives. It is important that customers can drop off their cars anywhere and do not have to drive to a specific station. Being the first provider to negotiate with city representatives opens up the advantage of receiving better prices for the parking spots and covering a broader area for parking spaces, since they are a very limited good downtown. Such a lead-time advantage is an important informal protection strategy. The firm also applied a formal protection strategy: in order to open the cars of their fleet, customers need to implement a chip on their driving license. Holding the driving license against a sensor attached to the windshield will unlock the car. This chip technology is patented, but its protection power to keep competitors out of the market is limited, since various alternative technologies exist.

Another example of pay-per-use business models is represented by case 14, the search engine marketing company. Instead of paying a fixed (sometimes monthly) fee for an advertisement, case 14 offers invoicing only per amount of times the advertisement is clicked. This is an affordable way for firms to advertise in an efficient, customer specific manner. In order to protect the online advertisement industry's common pay-per-click approach, the firm follows two strategies. First, they build strategic partnerships with search engine firms, which offer them exclusive marketing rights on their platform. Second, their search algorithm, which matches demographical data with key words and raises the relevance of placing the ad, is patented. However, since it is very hard to prove process or algorithm infringements the protection strategy's power is rather limited.

As pay-per-use business models are characterized by customers not paying any initial upfront costs and thereby do not carry out any upfront investments it is quite

challenging for firms to protect their business model from competition. The prior mentioned examples of formal and informal protection mechanisms can be classified with medium protection relevance. Summing up, we argue that firms protecting their pay-per-use business model employ a medium level of informal protection and a medium level of formal protection strategies.

Proposition 3: Pay-per-use business models are characterized by the usage of a medium level of informal and a medium level of formal protection strategies to capture value.

3.4.4. Multi-sided platform and IP protection strategies

For firms, which apply the multi-sided platform business model, we observed a medium level of use both for informal and formal protection strategies.

Case 21 for example represents a firm that offers highly discounted coupons of retailers to end customers on its platform. Their attempt to protect their business model formally, was carried out by patenting the method of ‘communal purchasing’, which protects the procedure to offer deals only if a certain amount of buyers purchase it in a certain time frame. However, when we asked our informant of case 21 why the firm was successful although its business model is quite easy to imitate in spite of the patent of ‘communal purchasing’ his answer was: *“The main reason for our success was operational excellence as well as our very high speed.”* We observed that the couponing firms also focused on strong distribution channels and establishing powerful sales teams, which allowed the firm to grow much faster and territorially wider than its competitors, who also offered coupons online in a slightly different way and thereby, avoid to infringe the communal purchasing patent. Entering the market aggressively enabled the firm to generate a self-enforcing growth effect, which is typical for multi-sided platform business models. For multi-sided business models to gain a critical mass of customers is more important than focusing solely on patents. Investigating the other cases of our research sample, which run multi-sided business models, we observed similar characteristics. The credit card company (case 23) holds various patents which cover activities related to the operation of credit analyses, the issuance and the management of credit cards, the activation and verification of credit

cards, the prediction of financial risk, and electronic payments just to name a few. However our informant of case 23 also pointed out that “*registering a patent is one thing, but enforcing it is something completely different.*” Since most registered patents cover internal processes, it is quite challenging for the credit card company to observe and fight patent infringements. Similar to the statements of our informant from the couponing company also the credit card company believes that the success of their business model relies on their operational excellence. “*Everyone wants to play in the payment space, until they realize the difficulties of getting the infrastructure in place*”. Performing handling details (e.g. charge backs, disputes etc.) conveniently plays a crucial role for the firm’s success. That is why the credit card company also focuses on managing a strong partner network and operating complex processes smoothly.

Summing up we argue that firms which are characterized by the multi-sided platform business model are recognized to use both a medium level of formal protection as well as informal protection.

Proposition 4: Multi-sided platform business models are characterized by the usage of a medium level of formal and a medium level of informal protection strategies to capture value.

3.5. Conclusions, implications, limitations, and future research

3.5.1. Conclusions

The results have shown that the use of formal and informal protection strategies differ across various business models. The propositions and the business model protection framework show that depending on the business model the firm selects, different protection strategies are necessary to successfully protect the business model. Put differently, firms need to carefully think about if they can build up the protection strategies required for each business model when changing their business model.

3.5.2. Theoretical Implications

Our study integrates intellectual property management insights to business model literature and contributes to both research streams accordingly. Although previous scholars on business models have highlighted that business models need to create and capture value (Chesbrough, 2007; Johnson et al., 2008; Morris et al., 2005; Teece, 2010; Zott et al., 2011) research so far has mainly focused on value creation drivers and neglected to analyze how to capture value. The results of this study show that it is important to understand the mechanism of different protection strategies. More specifically our study shows that firms operating the same business model also show similar patterns regarding the configuration of formal and informal protection instruments and that firms operating different business models show different configurations of formal and informal protection strategies. The razor and blade business model is characterized by high use of formal as well as informal protection, while the franchising business model is protected by a high level of informal protection and a medium level of formal protection instruments. The pay-per-use model and the multi-sided platform model show a medium level of formal and informal protection instruments. Hence, we extend initial research in the important field of IP protection for business models (Desyllas & Sako, 2012).

We also enhance the ‘profiting from innovation’ literature (Amara et al., 2008; Arora & Ceccagnoli, 2006; Dosi et al., 2006; Hall & Ziedonis, 2001; Harabi, 1995; McGahan & Silverman, 2006; Pisano, 2006; Teece, 1986, 2006) by extending the applicability of IP protection mechanisms to the context of business models. Furthermore, by using multiple protection strategies for formal and informal protection and moreover by adding additional informal protection strategies we extend research on IP strategies, which has so far mainly focused on patents and secrecy as the two main protection strategies (Gallié & Legros, 2012).

3.5.3. Managerial implications

The results of our study, namely the different configurations as well as the different intensities in the use of formal and informal protection mechanisms, depending on which business model is operated, leads to the following managerial implications. Firstly, the results can serve as a starting point for practitioners to achieve a thorough

understanding of the relationship between business models and IP protection instruments. Secondly, managers of incumbent firms, who attempt to review their business model, can use the matrix as a reference on how other successful companies apply formal as well as informal protection instruments and how they capture value from their business model. Depending on the current business model they operate it might be useful to enhance certain protection instruments (e.g. by establishing the appropriate complementary assets) in order to generate competitive advantages.

Thirdly, recent entrepreneurs can take the results as guidance for deciding about the business model they want to operate: Depending on the current assets they own, they might be more successful running a business model they can protect and consequently capture higher value from. On the other hand, the results can help to allocate resources to where they are needed most. As young entrepreneurs typically have limited resources, they need to focus on the strategically most reasonable protection instruments. We suggest that firms running the razor and blade business model establish both strong formal as well as informal protection. On the other hand for firms operating the franchising business model it appears reasonable to focus on informal protection strategies like building strong brands, strong distribution channels and paying attention to qualified employees. Drawing from our sample, firms running the pay-per-use and the multi-sided platform business model seem to use less protection than the other two models. They make medium use of formal as well as informal protection.

3.5.4. Limitations and future research

A limitation of our study is given by our sample being limited to 24 cases and covering only four business models. Therefore larger studies, which include more business models, would enhance the explanatory power of the business model protection matrix. Furthermore, as our study is based on qualitative case study research a quantitative study testing the identified propositions would mark a promising path for future research. Also a longitudinal study could shed more light into the importance of formal and informal protection strategies during different phases of business model development. We hope that we could contribute to the exciting topic of business models and IP management and encourage future research in this field.

4. Identifying business model archetypes for a targeted innovation approach

Co-authored by Uli Eisert and Oliver Gassmann

Despite the fact that business model innovations have caught the attention of both researchers and practitioners in recent years, they are at present inadequately understood when compared to other types of innovations. Thus, the innovation process is imperfectly supported and best practices are rarely used. While companies often systematically incorporate knowledge about existing solutions into the innovation process for products, services or processes, they rarely do so for business model innovations. The systematic use of knowledge about existing business models seems to be key for an effective and efficient innovation process. Even though business models are highly company-specific, they can be aggregated into archetypes that allow for a general categorization of all types of business models. Based on a literature review and an empirical analysis of a 29 firms, a framework for business model archetypes is developed and discussed in the context of the innovation process. We argue that the framework of business model archetypes can be used in the early stages of the innovation process, thereby contributing to better results, particularly in the ideation phase.

4.1. Introduction

The increasing challenge to differentiate based on products and services has led to significantly greater interest in the research and practice of business model innovation management (Chesbrough, 2007; IBM, 2012). Nevertheless, there is a striking discrepancy within most companies between the degree of awareness about the importance of business model innovation and its implementation (Bucherer, Eisert, & Gassmann, 2012; Chesbrough, 2010; Venkatraman & Henderson, 2008). Product innovation management always understood the fundamental importance of re-using existing solutions for the purpose of innovation (e.g. Herstatt & Kalogerakis, 2005; Gassmann & Zeschky, 2008). However, only recently has this idea been adapted to business model innovations, with different approaches to leverage existing business models (McGrath, 2010; Schief & Pussep, 2013). To accomplish this feat, various scholars tried to build taxonomies and frameworks to cluster and distinguish fundamentally different business model types, here referred to as archetypes. However, most of these studies are limited as they overly focus either on a specific industry, a specific field of business, or a certain region, making it difficult for firms to apply them. What is missing is a generic approach that utilizes business model archetypes for innovation. These archetypes are valuable because they represent the highest meaningful level of abstraction about the general options for business model design. A systematic investigation of helpful dimensions for the abstraction of business models and their usage throughout the innovation process can help to close the described research gap and to contribute to a better understanding of business model design and advance the understanding of best practices needed both in theory and practice. Through empirical insights determined by 29 case studies, this paper addresses this research gap, develops a framework for business model archetypes, and discusses its application in the innovation process.

The paper is structured as follows. The following section provides an overview of related work, first in the area of business models and existing approaches for business model categorization, secondly in the area of the business model innovation process and existing approaches to leverage available knowledge within this process. Section 3 comprises the methodology of our endeavor, in particular the research setting as well as the data collection and analysis. The findings of the analysis, namely the

business model archetype framework on the *Network* and *Enterprise Level*, are presented in section 4. Subsequently, the usage of the framework in the innovation process is discussed in section 5 and implications are drawn. The paper closes in section 6 by outlining implications for theory and practice on the one hand and deriving recommendations for future research on the other.

4.2. Theoretical background

4.2.1. Business models and approaches to business model categorization

Business models are regarded as a novel unit of analysis due to fast changing economic environments (Amit & Zott, 2001; Zott, Amit, & Massa, 2011). The business model as a concept refers to the basic logic of how firms ‘do business’ (Linder & Cantrell, 2001). More specifically, the concept is often used as a conceptual tool containing different building blocks (Osterwalder, Pigneur, & Tucci, 2005). These can be abstracted into four central dimensions: value proposition, operating model, revenue model, and the relations to target customers. Synthesizing different extant definitions (Afuah & Tucci, 2000; Morris, Schindehutte, & Allen, 2005) we use the following definition suggested by Bucherer, Eisert & Gassmann (2012, p. 184): “The business model abstracts the complexity of a company by reducing it to its core elements and their interrelations and thus specifies the core business logic of the firm.” For the description of business models, the most established format is the business model canvas (Osterwalder & Pigneur, 2010). This canvas focuses on the enterprise level only, so it was recently suggested that it be complemented by a description of a network level (Eisert, 2013). A network level would enable a better understanding of the relationship a firm has with its partners, but also of the relationships the partners have between one another (Eisert, 2013). Capturing the value flows between all relevant business model participants not only offers a more profound picture of the business model, but also helps the focal firm to compare its way of doing business to the way of its competitors (Eisert, 2013). Furthermore, while the business model canvas of Osterwalder & Pigneur (2010) allows for easy illustration of the status quo business model its ability to depict change is limited.

Additionally, the canvas does not provide hints for new business model options nor does it provide directions for innovation of the current business model.

These points could be achieved by developing a framework for business model archetypes that will allow not only the portrayal of status quo business models, but also business model transformations as well as hints for suitable directions for the innovation of business models. In regards to existing approaches to business model categorization, we conducted a systematic literature search from prior research around the topic of business model archetypes following proven approaches (Tranfield, Denyer, & Smart, 2003; Webster & Watson, 2002). In doing so, we feel confident that we have captured the state-of-the-art as completely as possible. The literature search resulted in 16 articles, which are listed in Table 5.

As the literature search shows, previous research has suggested different categorizations of business models. However these studies are limited, due to the fact that many publications focus on e- or web-business models only (Bienstock et al., 2002; Dubosson-Torbay et al., 2002; Hodge & Cagle, 2004; Rappa, 2001; Timmers, 1998; P. Weill & Vitale, 2001). While some publications explicitly address the topic, others do it rather implicitly, for example by analyzing the specifics of multi-sided business models in comparison with one-sided business models (Eisenmann et al., 2006; Hagi, 2009). Some other publications limit their endeavors to include suitable dimensions for business models in one industry, such as the telecommunication industry (Becker et al., 2012), or in one area, e.g. project-based firms (Kujala et al., 2010), or in one region e.g. Spain (Camisón & Villar-Lopez, 2010). The most promising approaches seem to be those that try to provide a generic categorization (Chatterjee, 2013; Tapscott et al., 2000). However, they do not clearly separate categories of the enterprise level from those on the network level. In addition, their proposals focus on different dimensions.

Here, we intend to contribute through empirical insights and the integration of the work done before. However, the development of generic business model archetypes is only one side of the coin. In order to unfold their full value for practitioners, it is at least as important to discuss how business model archetypes can be used to enhance the business model innovation process, e.g. analyzing the current business model and ideating for new business models. Therefore in the following chapter approaches to leverage existing knowledge in the business model innovation process are discussed.

Table 5: Existing approaches to business model categorization

Source	Description	Dimensions / Archetypes/Patterns
Becker et al. (2012)	"[...] we focus in this paper on the theory and implementation of four distinct platform models for mobile service delivery. Furthermore, we perform a classification of platform agility features, business and technology oriented, along with a comparative analysis of their effectiveness." (p. 650)	Dimensions: Closed Systems vs. Open Systems, Portal-Based Models vs. Device-Centric Models Patterns: Telco-Centric (e.g. Vodafone Live!), Aggregator-Centric (e.g. Facebook Mobile), Closed Technology (e.g. Apple iPhone), Open Technology (e.g. Google Android)
Bienstock et al. (2002)	"In this article, the authors propose the first complete taxonomy of web business models. The taxonomy presented here examines business models for both business-to-consumer and business-to-business e-commerce." (p. 173)	Dimensions: Number of Buyers, Number of Sellers, Type of Seller, Price Mechanism, Nature of the Product, Frequency of Offering Patterns: Sales, Hagggle, Barter, Broker, Reverse Auction, Auction, Aggregation, Exchange, Monopoly, Private Exchange, General Exchange, Type of Limited Exchange (Internal, Oligopolistic, Industry Specific)
Camisón & Villar-Lopez (2010)	"This study set out to promote advances in the conceptualization and implementation of the business model construct, as well as in its classification and the comparative analysis of its efficacy. The first contribution of this work comprises the development of a delimitation of the business model concept. The second contribution consists of offering a taxonomy of the business models that exist in Spanish industry." (p. 310)	Dimensions: Hierarchical Structure, Degree of Formalization, Degree of Centralization, Coordination Mechanism, Degree of Diversification, Degree of Vertical Integration Patterns: Multivisional Model, Integrated Model, Hybrid Model, Network-Based Model
Chatterjee (2013)	"This article develops a road map that will enable firms to choose from one of four types of generic business models as their primary focus and then go through a systematic process to consider multiple design configurations for their business model and use decision protocols to choose the design that has a high probability of success." (p. 97)	Dimensions: Efficiency, Perceived Value Archetypes: Efficiency-Based, Perceived Value-Based, Network Value (Loyalty-Based), Network Efficiency
Dubosson-Torbay et al. (2002)	"'Business model' is one of the latest buzzwords in the Internet and electronic business world. This article has the ambition to give this term a more rigorous content. The objective is threefold. [...] The second is to propose a multidimensional classification-scheme for e-Business Models, as opposed to the actual tendency in academic literature to use two-dimensional classifications." (p. 5)	Dimensions: User role, Interaction Pattern, Nature of the Offerings, Pricing System, Level of Customization, Economic Control, Level of Security (to monitor and verify purchases), Level of Value Integration, Value/Cost Offerings, Scale of Traffic, Degree of Innovation, Power Distribution between Buyer and Seller
Eisenmann et al. (2006)	"In the following article, we draw on recent theoretical work to guide executives in negotiating the challenges of two-sided networks. We begin by looking at the factors that senior managers must consider in designing their platforms' business models. The key decision here is pricing." (p. 3)	Dimensions: One-sided, Two-sided
Ghezzi (2012)	"The purpose of the paper is to provide a business model design reference framework for mobile platform providers [MPPs], the platform vendors and technology enablers of the mobile content market. [...] a first taxonomy of three noteworthy business models currently adopted by MPPs – 'pure play', 'full asset' and 'platform & content management' – is identified [...]" (p. 36)	Dimensions: Value Proposition, Value Network, Financial Configuration Patterns: Pure Play Business Model Type, Full Asset Business Model Type, Platform & Content Management Business Model Type
Hagiu (2009)	"This paper first lays out a simple micro-founded framework which aims to organize academic and managerial thinking about MSPs. [...] Using a variety of illustrations, the framework is then used to formulate general principles driving MSP design and expansion strategies: choosing the relevant platform 'sides', deciding which fundamental activities to perform and trading off depth against scope of MSP functions." (p. 1)	Dimensions: One-sided, Multi-sided

Hodge & Cagle (2004)	<p>“This paper categorizes and discusses the different types of business-to-business electronic business models currently being used by businesses and discussed in the academic literature, and shows how these business models are being implemented within the textile industry.” (p. 211)</p>	<p>Patterns:</p> <p>Sourcing Models, Ownership Models, Service-based Models, Customer Relationship Management Models, Interaction Models, Revenue Models, Supply Chain Models</p>
Kujala et al. (2010)	<p>“This paper contributes to the existing knowledge by suggesting use of solution-specific business models with six key business model elements and by developing a typology of five solution-specific business models. The typology can also be used for assessing the performance of individual solutions.” (p. 96)</p>	<p>Dimensions:</p> <p>Archetypes:</p> <p>Value Proposition, Revenue Generation Logic Basic Installed Base Services, Customer Support Services, Operating and Maintenance Outsourcing, Delivery of Life-Cycle Solutions, Development of Life-Cycle Solutions</p>
Linder & Cantrell (2001)	<p>“How do managers develop a good business model—one that creates value? Can we identify any overarching principles that lead to business model advantage? This question isn't easy to answer because operating business models are like insects—the diversity of shapes, colors, and sizes is stunning. [...] Despite this diversity, we can list and categorize business models by focusing on two main dimensions: a model's core, profitmaking activity, and its relative position on the price/value continuum.” (pp. 5-6)</p>	<p>Dimensions:</p> <p>Patterns:</p> <p>Core Profit-Making Activity, Price/Value Balance Price Models, Convenience Models, Commodity-Plus Models, Experience Models, Channel Models, Intermediary Models, Trust Models, Innovation Models</p>
Rappa (2001)	<p>“Business models have been defined and categorized in many different ways. This is one attempt to present a comprehensive and cogent taxonomy of business models observable on the web. The proposed taxonomy is not meant to be exhaustive or definitive. Internet business models continue to evolve. New and interesting variations can be expected in the future.”</p>	<p>Archetypes:</p> <p>Brokerage Model, Advertising Model, Infomediary Model, Merchant Model, Manufacturer Model, Affiliate Model, Community Model, Subscription Model, Utility Model</p>
Tapscott et al. (2000)	<p>“We have investigated many hundreds and have written more than two hundred case studies. A number of distinct patterns emerged, with direct bearing on competitive strategy. Central to our analysis is a new typology of business models. The typology applies to the physical business world almost as well as to the digital world. [...] These two parameters – economic control and value integration – define the fundamental characteristics of five basic types of b-web: Agora, Aggregation, Value Chain, Alliance, and Distributive Network.” (pp. 28-30)</p>	<p>Dimensions:</p> <p>Archetypes:</p> <p>Degree of economic control, Value Integration Agora (e.g. eBay), Aggregation (e.g. Amazon), Value Chain (e.g. Dell), Alliance (e.g. Linux), Distributive Network (e.g. FedEx)</p>
Timmers (1998)	<p>“This article [provides] a framework for the classification of Internet electronic commerce business models. This framework has been developed on the basis of current commercial Internet business and experimental work in European R&D programmes.” (p. 3)</p>	<p>Dimensions:</p> <p>Patterns:</p> <p>Degree of Innovation, Functional Integration e-Shop, e-Procurement, e-Malls, e-Auctions, Virtual Communities, Collaboration Platforms, Third-Party Marketplaces, Value Chain Integrators, Value-Chain Service Providers, Information Brokerage, Trust Services</p>
Weill et al. (2005)	<p>“This paper begins by defining a business model as what a business does and how a business makes money doing those things. Then the paper defines four basic types of business models (Creators, Distributors, Landlords and Brokers). Next, by considering the type of asset involved (Financial, Physical, Intangible, or Human), 16 specialized variations of the four basic business models are defined.” (p. 1)</p>	<p>Dimensions:</p> <p>Archetypes:</p> <p>Type of Rights being sold, Type of Assets involved Creator (Entrepreneur, Manufacturer Inventor), Distributor (Financial Trader, Wholesaler/Retailer, IP Trader), Landlord (Financial Landlord, Physical Landlord, Intellectual Landlord, Contractor), Broker (Financial Broker, Physical Broker, IP Broker, HR Broker)</p>
Weill & Vitale (2001)	<p>“This book provides a systematic and practical analysis of e-business models, about which there has been much talk but little structure research. In chapter 2 we define a business model and provide a practical framework for understanding both physical and electronic ways of doing business.” (S. 26)</p>	<p>Patterns:</p> <p>Content Provider, Direct to Customer, Full Service Provider, Intermediary, Shared Infrastructure, Value Net Integrator, Virtual Community, Whole of Enterprise</p>

4.2.2. Business model innovation process and approaches to leverage available knowledge

A business model has to be adopted and innovated to respond to changes in the market or the technology or to leverage new opportunities (Hedman & Kalling, 2003; Morris et al., 2005). These changes require continuous business model innovation. Taking into account different and partially contradictory definitions (Hamel, 1998; Venkatraman & Henderson, 2008; Amit & Zott, 2001; Moore, 2004), we follow the definition of Bucherer, Eisert & Gassmann, 2013, p. 184) and “define business model innovation as a process that deliberately changes the core elements of a firm and its business logic.” Thus, we regard innovations as business model innovations as being independent from the degree of innovativeness (new to the company, new to the industry, new to the world).

In innovation management it is a broadly accepted finding that, even though some innovations are totally new and discovery-based, the vast majority are driven by fusions or combinations of existing knowledge (Hargadon, 2002). Since the adaption of available solutions is a very effective and less risky way to innovate, the systematic usage of ‘the existing’ is a crucial part of systematic innovation processes (Hampton, 1997). The morphological analysis represents a proven approach to break down the model into its independent core elements and to investigate the known solutions for each element separately in order to explore the total set of relationships (Wissema, 1976). A more sophisticated way to leverage the existing body of knowledge is the systematic search for and usage of analogies (Dahl & Moreau, 2002). It could be shown that this approach is not just suitable for incremental innovations but even for breakthrough innovations (Herstatt & Kalogerakis, 2005; Gassmann & Zeschky, 2008).

With innovation management’s increasing focus of on business model innovations, different scholars started to investigate how existing knowledge could be systematically utilized in the business model innovation process. Schief & Pussep (2013) illustrate for the software industry how business models can benefit from a morphological analysis. By breaking down a model into different building blocks with the desired level of granularity and by providing all possible values for each block, the ‘solution space’ for business models in the software industry can be described in a systematic manner. In the ideation phase of the business model innovation process one

could leverage all feasible options within the software industry to derive promising new options for the own model. Due to the fact that business models are an abstraction of the core logic of a firm, analogical thinking seems to be very promising for business models as well. Promising existing business models (or just parts of them) are not limited by industry boundaries. On the contrary, to come up with innovative approaches the adaption of solutions from different industries is even more promising. So called business model patterns proved to be particularly suitable to stimulate the successful adaption of existing knowledge (McGrath, 2010).

In summary, it can be said that first approaches to utilize existing business models for the innovation process exist. However, what is missing is a generic and systematic approach to leverage business model categories in the innovation process.

4.3. Methodology

4.3.1. Research setting and case selection

As the review in Section 2 showed, the categorization of business models into archetypes is currently an understudied area of potentially high practical relevance. Generic categorizations of business models are missing and their application in the innovation process is neither defined nor discussed. Hence, to gain valuable insights on generic business model types across industries, products and services, and different company sizes an empirical study was conducted to establish a generic categorization that clearly separates dimensions on the network and enterprise level and builds on the few existing approaches that are rather generic and not limited to specific areas. Applying an explorative case study design allowed us to shed light into an area characterized by a lack of existing theory (Eisenhardt & Graebner, 2007; Yin, 2003). Thus, we started with individual cases and gradually derived more abstract conceptual levels and categories, which allowed us to explain and understand the patterned relationships within them (Charmaz, 1995). In order to compile a representative sample, the leading criteria for the cases to be included into the research sample was that they be as diverse as possible in terms of industries, products, and services. We followed the suggestions of Glaser & Strauss (1967, p. 61) and stopped including more firms into the research sample at the point of theoretical saturation, when

additional firms and data would no longer have enriched our findings with further evidence. Second, our informants should be able to capture the “big picture” of how their companies conduct their business.

Our sample comprises 29 firms, which are illustrated in Table 6.

Table 6: Business model cases in our research sample

Case	Business Model Description
1. Fast Food Chain	As a large multinational restaurant chain, this company focuses on serving fast food meals such as hamburgers, french fries and soft drinks. The individual restaurants are operated by franchisees around the world. These franchisees are independent merchants who receive all the necessary ingredients and equipment to run their business. In return for using the company’s trademark and know-how, franchisees are required to pay part of their revenue as a royalty fee to the franchisor. Hence, the business model revolves around a loose network of independent restaurant who all operate under the same brand.
2. Elderly Care Provider	In order to support aging in place, this company provides non-medical in-home care for seniors. In order to meet the growing demand for a more flexible approach to elderly care, this company enables individuals to work as independent caregivers. In exchange for a fee, these individuals are granted the knowledge to look after seniors and are provided with the rights to use the company’s brand.
3. Fashion Retailer	This German clothing company offers apparel and fashion accessories for men and women. It allows entrepreneurs to open new stores under its brand and make use of all related trademarks. The company does not manage the outlets by itself. Instead, these businesses are run by independent branch owners. They generate income by selling their franchisors clothing products. In order to compensate for using the company’s business model and trademarks, the branch owners are required to pay a regular fee.
4. Restaurant Chain	In contrast to conventional fast food franchises, this restaurant chain provides fresh and house-made Italian dishes that are cooked individually according to customer preferences. Therefore, its business model heavily revolves around experience selling. Due to its success, the concept was adopted in more than 70 locations around the world by allowing franchisees to open new restaurants. Although these restaurants operate under a single brand, they are administered by independent managers.
5. Grocery Chain	This retail company is based in Switzerland and offers a broad variety of consumer goods. Its business model focuses on convenience stores with long opening hours. They are typically located at train or gas stations. As a franchisor, this retailer offers entrepreneurs the opportunity to open their own branch and use the company’s business model. With these independent entrepreneurs, the company was able establish a wide distribution network at the most heavily frequented areas in Switzerland.
6. Safety Razors Manuf.	Being a well-renowned corporation in the personal care industry, this company is specialized in commercializing safety razors for men. It sells various types of razors, blades and other shaving products. Operating in a highly competitive market, the company depends on the value of its intellectual property. Therefore, the business model focuses on a strong brand. The protection of these trademarks is very important.
7. Printing Devices Manuf.	This American multinational company is one of world’s leading technology corporations. Amongst other products, it supplies a broad variety of printing devices. Since a considerable share of the company’s income is generated by complementary goods such as cartridges for ink-jet printers and photocopying machines, its business model relies for the most part on in-house products and technologies.
8. Coffee Capsules Manuf.	The market for coffee is generally highly competitive. This company was one of the first corporations to offer its coffee pre-apportioned in capsules. In comparison to conventional coffee, these capsules allowed for much higher profit margins. To strengthen its brand, the company created an exclusive and unique image by focusing strongly on experience selling. In addition, the coffee capsules can only be used with the corresponding coffee machines. This makes it difficult for competitors to enter the market.
9. Tooth Brush Manuf.	This company is a supplier of dental hygiene products such as toothbrushes, dental floss or

dental sticks. However, most of the company's revenue is not generated by its electrical toothbrushes, but by the toothbrush heads. These toothbrush heads need to be replaced regularly and thus lead to a steady income stream. Since it's not possible to use the toothbrush with toothbrush heads made by other manufacturers, the company is able to profit from strong customer retention effects.

10. Online Retailer This company ranks among world's leading electronic commerce corporations. It's most notably known for hosting one of the largest online retailing websites. To complement its e-book readers, it offers a broad variety of e-books. These e-books are provided by an extensive network of third party suppliers and can be bought online. Since the e-books only work on the company's e-book readers the platform can be regarded as relatively closed.
11. App & Music Store For many decades, this company was predominantly present in the software and hardware industry. In order to complement its already successful mp3-players, it recently launched a platform for distributing music online. This platform enables the company to generate additional revenue by selling apps, movies and music that can be used on its electronic devices. Although the music and other content on the platform are generated by an extensive network of third party suppliers, the company imposes restrictive rules on its partners. Compared to other platforms, it's a rather restrained ecosystem.
12. Car Sharing The purchase of a new car is generally associated with significant expenses for the customer. To ease financial hurdles in the private transportation industry, this company provides a car sharing service. It was founded as a joint venture between a major automotive manufacturer and a multinational car rental corporation. This joint venture enables customers to drive its cars while being charged on a pay-per-use basis. Customers are not required to buy or lease the vehicles anymore and thus are offered a flexible alternative to owning a car.
13. Online Ad Provider This company provides advertising services on the internet. Firms can sign up on the website and start an online marketing campaign. Compared to other means of advertisement, firms are not billed per ad but per click made by potential customers. Hence, they are only charged for ads that were actually successful in attracting new clients. In essence, this lean approach allows for flexible advertising and eases partnerships in online marketing.
14. Healthcare Provider Being one of the world's leading companies in the electronics sector, this multinational corporation launched a new service to support other firms in the industry with cutting-edge healthcare solutions. Based on its vast experience, the corporation is able to provide business assessments and technology recommendations. Clients are granted direct access to the company's technology.
15. Cloud Service Provider This company is major telecommunications provider in Switzerland. It recently launched a cloud computing service on its website, allowing customers to store their files online. They receive personalized and dynamic IT solutions which come along with a flexible cost approach for IT infrastructure management.
16. Video On Demand As one of Germany's leading television stations, this company introduced a video on demand service to complement its traditional TV broadcasting. This service allows customers to watch their favorite movies and TV shows online. Its business model relies on a broad network of partners, including internet providers for streaming, motion picture studios for the content and financial institutions for billing the customers.
17. Gaming Consoles Manuf. This company is a multinational manufacturer of consumer electronics, most notably known for its video game consoles. Its business model benefits as the number of gamers and video game publishers increase. With an increasing number of video games, the console becomes more appealing to gamers. On the other hand, a console with a high player base is profitable for publishers and thus entails the production of more video games. These development partners are oftentimes affiliated with the company through publishing agreements and close collaborations, making the ecosystem rather closed in comparison to other gaming platforms.
18. Online & Free Newspaper This company offers a daily newspaper for free and thus introduced a new business model to the publishing industry, which previously focus on subscriptions fees and direct payments from customers. In contrast, this business model uses advertising as its primary source for revenue. With an increasing readership, the newspaper becomes more attracting for advertisers. This enables the company to generate more revenue and potentially provide better content which – in turn – can lead to a larger readership. Hence, the relationships to customers as well as to advertisers play a vital role for this business model.
19. Couponing Company This company's business model is based on a website providing customers the opportunity

to buy products at highly discounted prices. The products are sold by companies who are interested in using this platform for customer acquisition. While this is an effective way for companies to commercialize their products, customers profit from lower expenses. The couponing website on the other hand receives a premium for featuring other company's products and connecting them with new customers. Therefore, this company's business model acts as a mediator between firms and their potential customers and creates a win-win-situation for all parties involved.

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|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20. Credit Card Company | As a large multinational financial services corporation, this company is best known for offering electronic funds transfers via credit and debit card. It helps other companies and its customers to process their payment transactions. |
| 21. Online Payment Company | This company provides payment and money transfers on the internet. It facilitates financial transactions for both companies and customers by offering an alternative to traditional payment methods. Profit arises from fees on every payment made. |
| 22. Insurance Company | Operating in Switzerland's highly competitive insurance market, this company introduced a new business model in order to refrain from the rigorous price battle in its industry. It applied telematic technologies to offer additional services such as accident data recordings or emergency and breakdown support. By partnering with ICT companies and making use of new technological capabilities, the company managed to create a powerful value proposition in the insurance market. |
| 23. E-Mobility Provider | In order to provide an eco-friendly approach in the private transportation sector, this company initiated a new business model which supports the use of electric cars. It maintains a network of charge spots and battery-switching stations. In return for a subscription fee, customers are allowed to use this technological infrastructure. Moreover, they can profit from various other services that make electric vehicles more convenient and affordable. |
| 24. Derivatives Provider | Weather is a critical factor and crucial to every economic setting. Weather derivatives of insurance firms typically serve only large corporations and do not suit small and medium-sized enterprises (SMEs). In contrast, this company offers adequate risk protection to SMEs. Customer can specify their needs and buy the certificates online. The business model is based on an internet platform which eases the access to weather derivatives for SMEs. |
| 25. High Tech Manuf. | This company was founded as a joint venture between two major chemical corporations and is specialized in producing silicone products. Since the silicone industry was facing the challenge of over-capacity, this company had to adapt its business model and implement a dual strategy. While one branch was set up to focus on service-oriented and innovative products, another branch had to cover standardized product offerings with varying prices and sales conditions. This helped to fully utilize the company's capacities and stand its ground in the market. |
| 26. Mobile Payment | As smartphones have become increasingly prevalent and widespread in industrialized countries, mobile payment solutions are on the rise. This company provides mobile payment solutions via SMS or near-field communication (NFC) technology, enabling its customers to pay with their phones. Its business model requires an extensive network of partners, including retailers and financial institutions. |
| 27. Automation Solutions | This company offers automation solutions for filling systems in the industrial machinery industry. Its business model is designed to meet the industry's increasing demand for a shift from fixed to variable costs. Therefore, the company makes use of technological advancement in the ICT sector and provides services instead of products. This helps to ease the relatively rigid cost structures of traditional industrial machinery companies. |
| 28. Bank | In recent years, the banking industry has been subject to radical change, forcing many firms to adapt their business model according to new economic, social and legal circumstances. As a small Swiss private bank, this company decided to specialize on a few selected elements of the value chain. Hence, its business focuses exclusively on performing transaction-oriented tasks for security dealers and other banks. |
| 29. ICT Security | This company started as a system integrator, offering projects and consulting services in the area of network security. After the dot-com boom, it changed its business model and became a service provider. Its standardized services are offered on a subscription base. Due to economies of scale, its customers can benefit from lower costs. |
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4.3.2. Data collection

For data collection we used three sources. First, we interviewed overall 29 C-level or top executives that were directly involved in the case companies' strategy and business innovation management.

The semi-structured interviews followed the nature of "guided conversations" (Yin, 2003). This approach allowed us to adapt our questions to the experts' knowledge. In doing so, we shortened questions in certain fields and further elaborated on them in others where we expected to gain further knowledge for our investigation. Nevertheless, we were still able to keep enough structure to ensure the comparability of our cases (Mack, Woodson, MacQueen, Guest, & Namey, 2005). We sent out the interview guide in advance, which comprised an introduction and the aim of the field of investigation as well as a mix of open and closed questions, to allow the experts to prepare accordingly. Interviews lasted between 1 and 1.5 hours on average. Second, we collected publicly available company slide decks, press releases, annual reports, and published documentations, which allowed us to sharpen our understanding of the conducted business models of the respective firms (Rowley, 2002). Thirdly, we compared our empirical data with data from existing literature (Table 5) in order to match our empirical data with existing categorizations. We were thereby able to triangulate our data, which helped us to substantiate our findings (Eisenhardt, 1989).

4.3.3. Data analysis

First, we transcribed the collected qualitative data verbatim (Corbin & Strauss, 2008). Second, we paraphrased the interviews, compared them, and systematized our results. In order to achieve our goal, namely to derive a framework for business model archetypes, we paid particular attention to patterned characteristics of our selected cases. In order to capture the business model characteristics in a holistic way we decided to distinguish between two different levels: a *Network Level*, which captures the business model characteristics of the surrounding business network, and an *Enterprise Level*, which is focusing on the firm itself.

When looking at our cases from the *Network Level* two characteristics became especially apparent during the course of analysis. The first one is the *type of market* the business model addresses. Several companies operate *in multi-sided markets*, that is, they act as multi-sided platforms and link two or more distinct user groups on each

side. These user groups are affected by indirect network effects, which means that the attractiveness of the platform increases for one group of users as more members of the other group join – and vice versa (Evans, 2003). Others operate their businesses in a more “traditional” way in *one-sided* markets. The second predominant characteristic that emerged during data analysis was the *degree of openness* of the business model in terms of the level of economic control the firm possesses over partners and customers (Tapscott et al., 2000). Some companies operate their business with a *high degree* of openness by granting their partners a high degree of freedom in terms of accessing their business network and operating independently as a part of it. Another component of openness involves giving customers the freedom of choice by granting the opportunity to combine their products and services with offers from other providers. Others tightly control the partner and customer relationship, and consequently run their businesses with a low degree of openness.

When researching the *Enterprise Level*, we found two other dimensions best suited to describe the different firms’ business models. The first characteristic depicts the *degree of vertical integration* under which the firms function. Some firms perform most of the value creation and delivery activities themselves (*high degree of vertical integration*) while others outsource them to partners (*low degree of vertical integration*) (Robertson & Langlois, 1995). The second characteristic illustrates the *strategic focus* of the firms. While some firms operate in a strongly *price-driven* manner, others operate in a more *value-driven* way, with higher quality of products and services and consequently with higher prices (Porter, 1980).

For each level we rated the case companies’ business models independently, discussed differences between the ratings, and subsequently resolved them (Bullock, 1986). The triangulating of our findings (Jick, 1979) using multiple data sources (Interviews, publicly available company data, literature on business model categorization) confirmed the validity of our results. The results of our endeavor, namely the framework for business model archetypes with the *Network* and the *Enterprise Level* are presented in the following section.

4.4. Empirical findings on business model archetypes

4.4.1. Network Level

Looking at the *Network Level*, the first result of our empirical study, which becomes apparent, is that most of the firms explored are found in fields A and C. Firms that address multi-sided markets are likely to open up their business models. On the other hand, we found that the firms that address one-sided markets tend to operate with a low level of openness. However, prominent firms exist, that operate in multi-sided markets with a low level of openness but with a high level of openness in one-sided markets. The distribution of the firms across the four fields shows that although there is a clear tendency towards opening up the business model in multi-sided markets and closing it on one-sided markets, all four options represent promising ways for business model innovations.

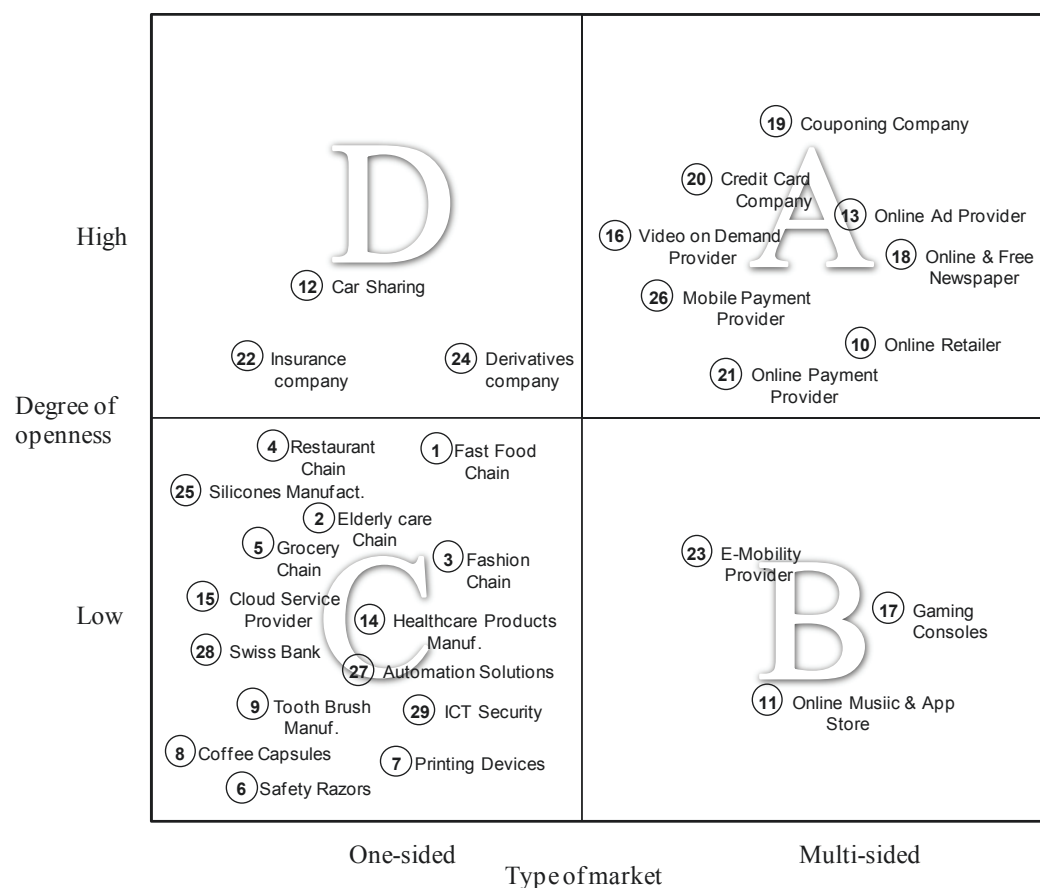


Figure 6: Network Level

Field A comprises firms that conduct business models that address *multi-sided markets* and are characterized by a *high degree of openness* in their business model. The couponing company (case 19), for example, offers highly discounted coupons of retailers to end consumers and thereby connecting these two interdependent customer groups on its platform. The more consumers they attract to buy coupons on the platform, the more attractive it is for retailers to participate and launch new product or service offers via the couponing company's website. Their business model is characterized by a high degree of openness as almost any retailer can place its discounted offers on the platform and, once the consumer decides to make use of the offers, retailers deliver them without the supervision of the couponing company. The couponing company relies solely on the coupon sales and billing processes. A second example of field A is represented by the credit card company (case 20). As a large multinational financial services corporation, this company is best known for offering electronic fund transfers via credit and debit card. As a multisided platform, it connects retailers and consumers and helps them to process their payment transactions. As more consumers prefer to pay via the company's credit cards, it becomes more attractive for retailers to offer their customers this payment option. Vice-versa, as more retailers accept the company's credit card for payments, the credit cards become more attractive for consumers, since they can use it at a larger number of shops. The company's business model operates with a high degree of openness, since basically any retailer and any consumer can join the platform and utilize it independently. Both customer groups are also free to use any other credit card company's offers and are not restricted in any way.

Field B represents firms that address *multi-sided markets* that operate with a *low degree of openness*. A typical example of field B is that of the company with an online music & apps distribution platform (case 11). The company's mp3 players are sold at premium prices. The songs and apps, which can be downloaded from its online platform for a small fee, complement the revenue generated by the sales of the hardware. Although addressing multi-sided markets, namely app users and app developers, their platform can be characterized by a low level of openness, as their mp3 players are built to only play apps & music downloaded from their platform and conversely, the apps & music on their platform are only playable on their mp3 players. In this way the company is able to generate high profits not only by selling

apps & music, but also by selling the electronic devices needed to play it. Thereby they exhibit high economic control over the customer relationship. The video consoles company (case 17) represents another example of Field B. Mainly known for its video game consoles, this company has a business model that benefits as the number of gamers and video game publishers increase. With more available video games available, the console becomes more appealing to gamers. On the other hand, a console with a large player base is profitable for video game publishers and thus fosters the production of more video games. The customers of this company have only a low degree of choice, since the games sold by this company only work together with the company's consoles and vice-versa. Hence, once a customer decides to purchase one of the company's consoles, the company receives a high degree of economic control over the customer relationship.

Field C covers firms that address *one-sided markets* and operate with a *low degree of openness*. A leading Telco company (case 15) utilizes a business model for its cloud service that exemplifies this field by offering their business customers online files storage on their highly secured servers. As their value proposition involves a high degree of security and trust, almost all value creating and capturing activities are performed by the company itself or are under strict control of their partners. As a consequence of this strict control, the company can ensure the safety it promises. This model lends itself to a long-term relationship between the company and its customers because customers, who decide to make use of the company's offer, pass highly confidential data to externals, thereby electing for this long-term option. Another example of Field C is the Swiss private bank (case 28), which specializes in investment advisory and asset management for wealthy privates. By nature of their industry, which is characterized by high trust and confidentiality, most of the Swiss private bank's activities are conducted by the company itself or under strict company control. Also, the customer relationship can be classified as quite controlled, because once the customer decides to work with the company, usually he stays very long-term.

Field D is characterized by firms that operate in *one-sided markets* and with a *high degree of openness*. For example, the car-sharing company (case 12) attracts mainly modern city dwellers, who see no need to take on the financial hurdles of buying their own car, but want to be mobile in their cities without depending on public transportation. The business model can be considered as open, since the company

does not take control over the customer relationship at all: the customer can sign up for free, is only charged per use, and has no further commitments nor ties to the company. Another example for Field D is illustrated by the derivatives company (case 24), who opened up its sales force to a wide variety of partners, who can choose which partner type they want to engage in, e.g. white label partners or brokers, and earn fees in case they close deals with customers.

4.4.2. Enterprise Level

On the *Enterprise Level* the companies investigated are also spread around all four fields of the matrix and operate their businesses with different levels of vertical integration as well as with different strategic focuses.

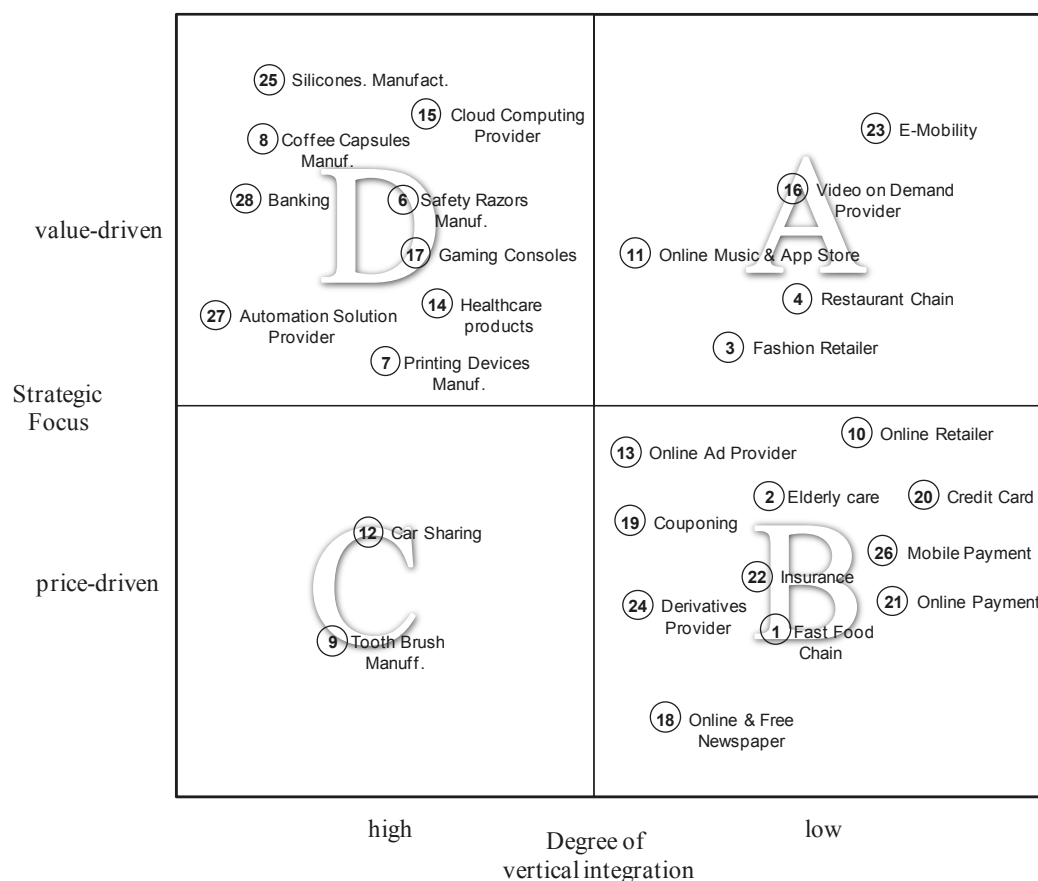


Figure 7: Enterprise Level

However, the majority of the companies are classified as belonging to Fields B and D. Firms that operate in a more price-driven manner tend to be less vertically integrated (Field B), while firms with a value-driven strategic focus tend to operate with a higher degree of vertical integration (Field D). Only a minority of the firms that we investigated fell into the categories covered by Fields A and C.

Field A captures the firms that run their businesses with a *low level of vertical integration* and are *value-driven*. An example of Field A is the “Video on Demand” offering of a leading TV station (case 16) to complement its traditional (free) TV broadcasting. By allowing their customers to stream their favorite movies and TV shows online whenever they want, this TV station provides them with additional value, the charge for which comes in the form of extra fees per show or movie. This business model relies on a broad network of partners, including internet providers for streaming, motion picture studios for content and financial institutions for billing, leading to a low level of vertical integration. Another firm in field A provides an eco-friendly approach in the private transportation sector (case 23). This company initiated a new business model that supports the use of electric cars by orchestrating a network of charge spots and battery-switching stations. In return for a subscription fee, customers are allowed to use this technological infrastructure. Instead of operating their own gas stations, they make use of the existing network of leading gas stations, by making partnerships in order to provide customers with a dense network for battery-switching and/or charging. Additionally they partner with various car OEMs, which employ their technology and standards into their e-cars.

Field B embraces *price-driven* firms with a *low level of vertical integration*. This applies e.g. to the newspaper company (case 18). It offers a daily newspaper for free and thereby introduces a new business model to the publishing industry, which previously focused on subscription fees and direct payments from customers. In contrast, this business model uses advertising as its primary source of revenue. With an increasing readership, the newspaper becomes more attractive for advertisers. This enables the company to generate higher revenues and potentially provide better content, which, in turn, can lead to a larger readership. Hence, the relationships to customers as well as to advertisers play a vital role for this business model. In order to run this price-driven business model the newspaper firm needs to operate very efficiently. This is the primary reason for outsourcing many value creating activities in

their business. In particular, the editorial department is very lean and focuses predominantly on standardized content of external agencies. Furthermore print is outsourced to external printing offices and distribution takes place via external agencies. Other examples of field B are represented by the fast food company (case 1), which outsources the whole sales activities to franchisees, and the couponing company (case 19), which only acts as an intermediary between consumers and retailers, who create and deliver the products or services offered via coupons.

Field C summarizes the firms operating with a *price-driven* focus and at the same time with a *high vertical integration*. The car sharing company (case 12) was founded as a joint venture of a car OEM and a car rental company. Thereby, all important value steps along the value chain are performed by the joint venture itself, namely its fleet management expertise, its back end software and hardware solutions for the reservation and payment handling processes, run by the car rental company, and its supply of cars, enabled by the OEM. Utilization of this business model allows for price-driven operation that then attacks the incumbent car rentals with far lower prices for short-term rentals. A second example of field C is illustrated by the tooth care company (case 9), which supplies dental hygiene products such as toothbrushes, dental floss or dental sticks. Most of the company's revenue is generated by its electrical component - the toothbrush heads, which need to be replaced regularly. Different from other premium toothbrush brands, it manages to deliver the toothbrush and toothbrush head system at a far lower price than the competition, made possible by the development of a low-cost technology. Most of the activities along the value chain are performed in-house, and partnerships are only made for sales activities with stationary or online retailers.

Field D contains firms that operate with a *value-driven* strategic-focus and a *high level of vertical integration*. Exemplary for this field is the high-tech company (case 25) specialized in producing highly innovative silicone products and services for premium prices. As an innovation leader in its sector, this company invests heavily in its own R&D, operates its own production sites, and sells its products and services through its own sales offices and staff. Therefore this company can be considered highly vertically integrated. Similarly, for the coffee capsules manufacturer (case 8) it is extremely important to keep control over the whole value chain and to keep its R&D, production (roasting, filling etc), and its marketing, and sales activities completely in-

house. The coffee capsules, which are sold in its boutique shops for premium prices, are of the best quality and are sold by highly trained and extremely service oriented staff.

4.5. Discussion: Implications for the business model innovation process

In order to provide management practice with tools to implement and profit from our framework, in this section, we illustrate how our suggested categorization of business model archetypes can support in the innovation process and lead to better results.

To support business model innovation systematically, certain process phases are essential: analysis, ideation/design, validation, implementation planning, and implementation (Eisert, 2013). In the following section we discuss how the developed framework for business model archetypes can be leveraged in the analysis, design and validation phases of the innovation process.

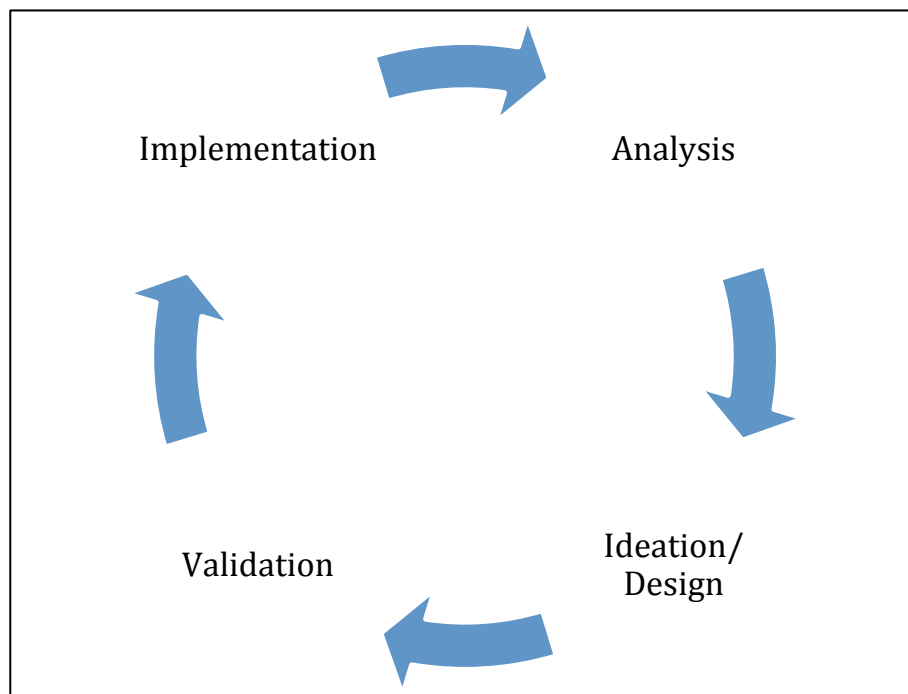


Figure 8: Innovation Process

4.5.1. Analysis Phase

In the analysis phase, a company usually describes its current business model as a baseline for the innovation process. Based on this description and the documentation of the firm's current strategy, the business model can be classified on both levels of our framework. This self-assessment deepens the team's understanding about the current position of their company in the market and future options. It also helps to establish 'business model thinking' within the team and ensure that all team members are on the same page.

If the assessment is done for the key competitors and not just for the own company, an excellent overview about the competitive position is established. This is the first indicator as to whether the company has a similar approach to that of the majority of its competitors. In that case, a move into a different position could lead to a rather unique position. If competitors have different positions in the framework or if the own position is even a rather exotic one relative to the majority of the competitors, the analysis of the reasons for the different approaches will provide valuable insights.

4.5.2. Ideation Phase

After a company has classified itself within the framework, one way to generate ideas for new business model options is to think about possible transition paths. This could be done both on the enterprise and on the network level, as well as their respective dimensions. A useful question to ask is: what would need to change if the company were to move from left to right, or from bottom to top (or vice-versa)? This can induce or inspire a lot of new, out-of-the-box ideas for new business model options. In the following section we illustrate this idea using examples for its application on each level.

Network Level

Regarding the '*Type of market*' dimension on the Network Level the possible transition paths involve creating or eliminating a platform that links the different customer groups. For example, a move from a 'one-sided' to a multi-sided' business model allows for an extension of the current business model by leveraging the existing relation to a customer group. In our research sample, the music company (case 11)

established a multi-sided platform by allowing third party application developers to create a variety of applications that can be bought and downloaded from the music company's application store and used on the music company's devices. Thus, the music company earns money by receiving a share of the revenue from the applications downloaded from its store. This tactic not only strengthens the customer relationship, but also, as described above, allows the platform provider to charge fees on all transactions that leverage the newly created platform. In this case, the access to customers was leveraged to extend the business by including offerings from partners via the platform.

When the '*Degree of Openness*' dimension is chosen, the transition paths involve increasing or decreasing the level of control that the business has over network participation and activities within the network. If a business decides to go from a rather controlled to a more open model, it enables a more open network for more players, encouraging the partners to act more autonomously. Successful examples for this kind of move include change from a closed to an open innovation model, open source and crowd-sourcing strategies, or involvement of customers e.g. in the ideation, design or even production and assembly phase. In our sample the Online Retailer (case 10) depicts an interesting example of the gradual transition from a controlled business model to an open model. The Online retailer decided to leverage its huge customer base by allowing and increasing number of partners to join their website use it to sell their products. If a professional retailer wants to join, he has to pay a monthly fixed amount (subscription model) and an additional a per-item seller fee to the Online Retailer. In turn, the third party seller's products are exposed to millions of potential customers and can therefore be found and bought much more easily on the Online Retailers website. In addition, the customers buy the third party products in a trusted shop in a convenient way. Partnerships are usually non-exclusive and customers get a higher level of choice.

Enterprise Level

When determining the '*Degree of vertical integration*' dimension on the Enterprise Level the possible transition paths are basically moves on the value chain: this involves the creation of new business model options by moving to a new value chain position. A move from '*low*' to '*high*' is about integrating backward and/or forward

on the value chain. Before accomplishing this, companies have to integrate steps that were done by suppliers or partners. Think about manufacturers that acquire key suppliers to integrate crucial steps in the value chain or fashion companies that were using retailers to sell their clothes and now build up their own stores to fully exploit their brands. The IT company (case 11) for instance bought a microprocessor manufacturer to gain control over this central part of their devices. A move from *'high' to 'low'* is either about specialization (focusing on the core competencies) or about simplifying the value chain by eliminating non value-adding steps. Referring to our research sample, the newspaper company (case 18) shows how the value steps of the traditional newspaper business can be outsourced in order to achieve efficiency advantages over competition. The content is sourced externally via news agencies, which in turn allows for a lean editorial department. The printing of the newspaper is accomplished by external printing firms and the distribution is carried out by external distribution agencies. The banking firm (case 28) depicts another very interesting example of how the traditional banking business can be innovated by specialization by breaking up the value chain in the banking sector. The bank started a separate entity, which exclusively focuses on performing transaction-oriented tasks, e.g. securities trading or payment services. These services are offered to the corporate mother but also to other banks and security dealers. The higher volumes led to profits due to specialization of the corporate daughter, while in the same time the corporate mother could concentrate on customer relationships and advising clients.

The *'Strategic Focus'* dimension involves a change from a *price-driven* strategy to a *value driven* strategy, or vice versa. From our research sample, the High Tech Manufacturer (case 25) serves as a good example of how a firm with a value-driven strategic focus can successfully established a price-driven business model. The firm ran a high margin, customized its solution and service oriented business model with silicon products, and faced the challenge of stagnating sales, especially in its low-end product segment, which was in the process of becoming a commodity. Therefore the firm decided to run a dual business model and established an additional business unit, which focused on selling their low-end products in a highly standardized way without any extra services and with highly automated processes in a “no frills” manner. The new unit turned out to complement their traditional business model and the firm now is running both of their business models very successfully.

4.5.3. Validation Phase

One important activity in the validation phase is the evaluation of all business model options that were created in the design phase and that were chosen for further validation. The criteria for the evaluation as well as the weights are usually determined in a project specific manner depending on the objectives of the innovation project. In most cases criteria like revenue potential, related costs, risks, and the organizational fit are part of the criteria catalogue. Our framework for the categorization of business models can be used to derive additional evaluation criteria that are ‘tailor-made’ for the respective business model category.

Regarding the Enterprise Level, the ‘*Strategic Focus*’ provides guidance for greater focus more on the revenue potential (*value-driven*) or costs (*price-driven*). For the ‘*Degree of vertical integration*’ dimension one might focus more on the organizational fit if the business model is characterized by a *high degree of vertical integration* since this indicates that a good fit to the core competencies is crucial.

On the Network Level the differentiation between one-sided and multi-sided business models is fundamental for the evaluation. For multi-sided models the ability to reach critical mass for all relevant customer groups is probably the most decisive success factor. Multi-sided models that fail in the attempt to gain critical mass cannot leverage network effects and are doomed to die. The evaluation criteria have to reflect these specifics. Regarding the ‘*Degree of Openness*’ dimension, evaluation criteria might focus more on the ability to control the network for business models that are classified as business models with a *low degree of openness* and on the ability to attract partners for business models that are classified with a *high degree of openness*.

4.6. Implications for theory and practice

In this article, we built a new framework for business model archetypes that is derived from a multi-case study and grounded in the existing literature on business model categorization. This framework is the first to introduce the concept of categorizing business models both on the Enterprise Level and on the Network Level. While the Enterprise Level rather reflects the classical strategic options within a selected market, the Network Level illustrates that the increasing importance of multi-sided business

models fundamentally changed the possibilities for business model design. The suggested framework does not focus on certain industries, company types, or regions. Also, it is not limited to internet-based business models, but can be used for all kinds of business models. In essence, this framework lays out the generally available options, contributing to a better understanding the rules of business model design.

This framework entails several managerial implications. First of all, the new framework enables companies to easily recognize the options at hand when thinking about a new business model. Each firm can now classify itself (and the relevant competitors) on both the enterprise and the network level to get a better understanding about its current strategic position in the market and the options for its future. Thinking about all feasible migration paths within the framework is a very promising way to systematically investigate new business model options and to come up with ideas for a sustainable competitive differentiation. Even if the migration does not directly lead to a viable business model option it might stimulate very promising ideas. For the evaluation of business model options the respective position of the new business model in the framework provides relevant hints for suitable evaluation criteria. To summarize, this new framework supports a new way to ‘build on the existing’ throughout the business model innovation process complementing existing approaches like the morphological analysis or analogical thinking e.g. based on business model patterns.

For this case study based research, several limitations apply. The case sample was composed to allow analyzing a broad range of companies in terms of size and industry. Nevertheless, one limitation is that the sample cannot be regarded as fully representative and hence does not permit ‘statistical generalization’. However, the perceived ‘logic of replication’ does allow for ‘analytical generalization’ (Yin, 1994). Further limitations could apply with regards to a single informant bias (Ernst & Teichert, 1998). The examination of individual cases leaves room for diverse interpretations, although the authors triangulated the data. There is a clear need for a larger sample size as well as for a cross-sectoral study on broad empirical data. Due to the fact that innovation processes greatly benefit from ways to ‘build on the existing’ future research on business model innovation should further investigate how knowledge about existing approaches can be utilized in all activities throughout the

innovation process to further contribute to a systematic approach to business model innovation.

5. Designing innovative business models

Single authored

This article examines the role of design thinking in business model innovation.

Based on expert interviews with members from Stanford University's design school and a workshop at Stanford's Center for Design Research, the article provides insights on how to enhance the St. Gallen Business Model Navigator with design thinking elements. Furthermore, it provides checklists for practitioners on how to further enhance the initiation, ideation, and the integration phase by the use of design thinking.

5.1. Design thinking as an additional lever for successful Business Model Innovation

In the past years the notion of design thinking has emerged as new methodology for innovation (Leifer & Steinert, 2011). Originating from the Silicon Valley and in specific from Stanford University, it depicts a human-centered approach that integrates technological, business, and human elements to create innovative products, services, and enterprises (Meinel & Leifer, 2010). Despite the fact that many definitions of design thinking exist (Brown, 2009; Lockwood, 2010; Martin, 2009), in general "...design thinking can be viewed as the application of design methods by multidisciplinary teams to a broad range of innovation challenges" (Seidel & Fixson, 2013).

Different from traditional strategic approaches to innovation that encourage to analyze, to plan, to predict, and to full-scale launch, design thinking inspires to design, to build, to test, to learn, to redesign, to iterate, and to then launch and scale slow (Fixson & Rao, 2014). This approach is of exceptional value to the field of business model innovation, where the success of a newly developed business model is, different from the launch of the next generation of products and services, neither projectable nor clearly predictable. Business model innovation redesigns the entire architecture of a firm in terms of how it creates value to its customers, how it integrates partners, and how it generates profits (Teece, 2010). Hence, it represents a radical type of innovation, where traditional ways of analyzing historic data to plan and predict future success is not appropriate. Innovating business models requires experimentation that creates data for further evaluation and justification (Chesbrough, 2010). It cannot be achieved by following traditional innovation methods alone. The creative, intuitive, human-centered, prototype-driven, and iterative design thinking approach could add quite value for the creation of radical breakthrough business models.

This article examines the role of design thinking in business model innovation and gives recommendations on how to use design thinking elements to further enhance the business model innovation process. It is structured as follows. The next chapter introduces the Business Model Navigator, a design methodology originating from the University of St. Gallen in Switzerland and proven to be successful in a wide variety

of industries to create innovative business models (Gassmann, Frankenberger & Csik, 2014). This is followed, by outlining the method. In specific, one workshop and several single expert interviews were conducted together with leading design thinking experts from Stanford's Center for Design Research. The goal was to introduce the Business Model Innovator and to receive feedback as well as to elaborate valuable enhancements with regard to the design thinking methodology. Subsequently, the outcome, namely additional design thinking elements that were recommended to enhance the business model innovation process are explained in detail and checklists for practitioners are provided. The article closes with a summary.

5.2. The Business Model Navigator and its application in business model innovation projects

The Business Model Navigator depicts the starting point and baseline for this study and represents a design methodology that firms can use to systematically innovate their business model (Gassmann et al., 2014). The methodology has been applied within leading companies in multiple industries and has been proven to be successful in creating innovative business models. Figure 9 represents the Business Model Navigator framework, which suggests innovating business models in a four-step process comprising three phases of business model design followed by a phase of realization. At the heart of the design phases is the business model triangle, which describes a business model in four dimensions (Frankenberger, Weiblen, Csik & Gassmann, 2013; Gassmann et al., 2014 p. 12): the What, the Who, the How, and the Why. While the What clarifies the value proposition of a business model, that is the product or service offerings to its customers, the Who represents the customer segments addressed with the business model. The How points to the way the value is created, e.g. certain internal processes or together with external partners. The Why clarifies the business model's cost- revenue structure, or put differently the firm's revenue model.

In the initiation phase, the status quo business model is described along the four business model dimensions. Together with an analysis of the surrounding ecosystem, the team develops an understanding of how the firm relates to its customers,

competitors, and partners. Furthermore, in the initiation phase, business model change drivers are identified. These drivers can be for instance technological, regulatory, or behavioral changes and can initiate business model innovations. The goal of the initiation phase is to get a clear understanding of the current business model and to identify focus areas for potential business model innovations.

In the ideation phase the main goal is to generate new business model ideas. The ideation phase starts with a presentation of inspiring business model examples, typically from different industries. The goal is to inspire the team with cross-industry analogies and to point out how other firms have solved similar challenges to their business model. This is followed by the confrontation of the firm's business model with so-called business model patterns, which depict business models proven to be successful by multiple companies in various industries (Gassmann et al., 2014; Frankenberger et al., 2013). Thinking about how a manufacturing company would do business with for instance a freemium business model (e.g. Skype) or a subscription business model (e.g. Netflix) triggers many new business model ideas. After having generated numerous ideas in the ideation phase, the most promising ones get selected and further elaborated in the integration phase.

In the integration phase, the selected ideas are further developed. Typically, the ideas generated in the ideation phase are still very rough and high level. They usually focus on only one or two business model dimensions, like a new value proposition or a new customer segment. Therefore, the goal of the integration phase is to align these high level ideas along all four dimensions of a business model and to achieve internal and external consistency. Central aspects in this phase are to make sure that enough resources and the right processes needed for the new business model (internal) are in place and to validate that the new business model fits in its business ecosystem comprising customer, partners, and competitors. "Light" business plans are created and pitch presentations prepared.

The implementation phase focuses on investments and pilot projects in test markets to realize the designed business model. Trial and error learning through (test) market introduction can lead to a business model re-design, however in the implementation it is the goal to get a newly designed business model realized. Therefore, the focus of

the study is on the first three design phases, taking into account the trial and error learning from the implementation phase.

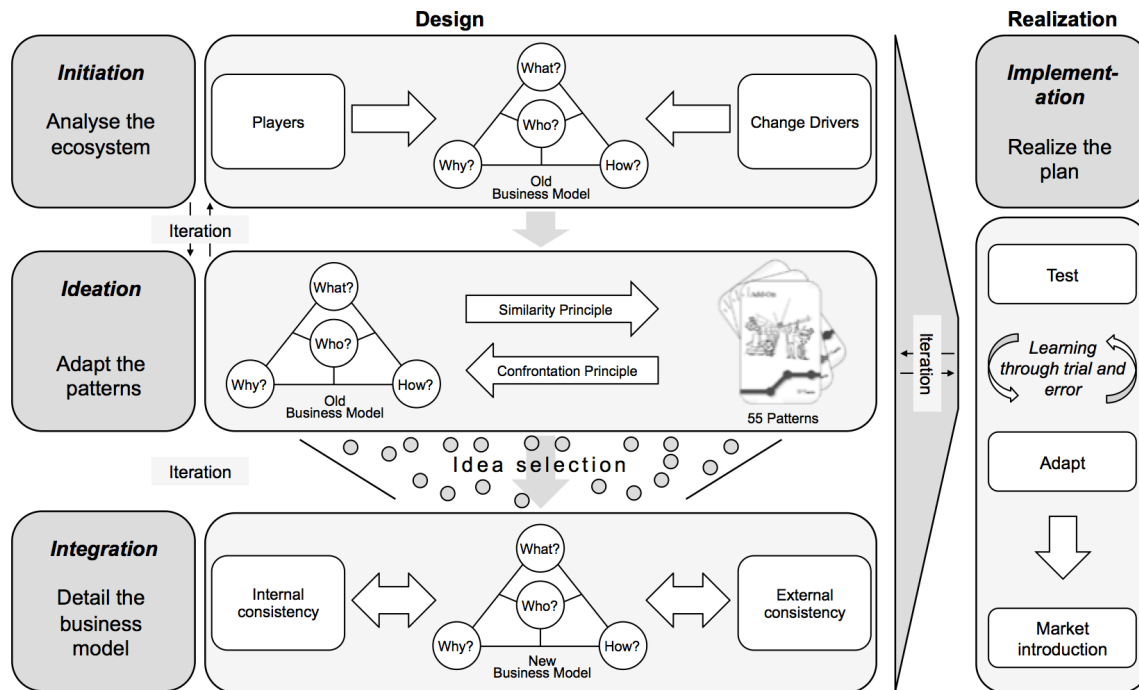


Figure 9: The Business Model Navigator

Soure: Gassmann, Frankenberger, & Csik (2014, p.24)

5.3. Method

To enhance the Business Model Navigator with elements from the design thinking discipline, original data was collected by conducting a half-day workshop with Stanford University's design thinking experts followed by single expert interviews for further elaboration.

The workshop took place at Stanford's Center for Design Research, which is closely connected to the Hasso Plattner Institute of Design, informally known as the d.school. As the d.school does not grant degrees, research on design thinking is mainly conducted at the Center for Design Research. Workshop participants comprised 15 Stanford design thinking experts, including Professors, post-docs, and PhD students. All of them were doing design thinking related research and had practical experience in design thinking, either from teaching or assisting design thinking classes in Stanford or/and coaching industry partners. At first, the Business Model Navigator and its corresponding business model innovation process were introduced to the group. This was followed by outlining a sample business model innovation project plan with the application of the Navigator in practice. The focus was on the first three phases of the process, namely the initiation, the ideation, and the integration phase. The presentation ended with questions and feedback from the design thinking experts and was followed by a 2.5 hours work session on the application of design methods to enhance and extend the business model innovation process. Each participant had to think about design thinking elements or methods used in past projects or conducted research on. The participants had to map those methods to the three business model innovation process phases (initiation, ideation, and integration). The goal was to map the elements to those phases where it was assumed to provide the most additional value. Each participant posted his individual feedback per innovation phase on a white board and presented his comments in front of the group. Then, the feedback was jointly discussed, clustered and further single interviews were conducted to elaborate on the advice given. The results of the workshop are summarized in Table 7.

Table 7: Business Model Innovation Process and Design Thinking enhancements

Phase	Business Model Project	Design Thinking enhancements
Project setup	<ul style="list-style-type: none"> • 3-4 months projects • Multi-disciplinary teams composed by members from Business Development, Sales, Marketing, Engineering, Controlling etc. 	<ul style="list-style-type: none"> • <i>Team composition should not be lead by discipline, instead by cognitive style => maximize cognitive diversity</i> • <i>Team with highest net empathy comes up with most innovative outcomes => choose emphatic team members</i> • <i>Group size: maximum 4 people; they outperform larger groups in creating innovative ideas</i> • <i>Shorter timeframe to put more urgency and to remove opportunity for overthinking</i>
Initiation	<ul style="list-style-type: none"> • Description of status-quo business model • Ecosystem analysis • Change driver analysis • Identification of focus areas 	<ul style="list-style-type: none"> • <i>Observe, build empathy, get insight, and uncover latent needs of customers. Talk to the players.</i> • <i>Conventional tools for market, technology, customer research only useful for incremental improvements. They will not lead to ideas that change the rules of the game.</i> • <i>Collect data by recorded interviews, take pictures, make videotapes, and understand the customer experience</i> • <i>Convert and synthesize collected data, and make a design problem formulation</i>
Ideation	<ul style="list-style-type: none"> • Presentation of inspiring cross-industry examples • Idea generation with pattern confrontation methodology • Clustering and detailing of ideas • 80-100 ideas, 3-5 BM ideas 	<ul style="list-style-type: none"> • <i>Focus on team work, team leaders, and innovation culture</i> • <i>Iterate multiple times between divergent generation of many ideas and convergent deduction to a single idea</i> • <i>Install a pivotal thinking team leader. He will close the representational gaps between different cognitive style team members. A pivotal thinker has the ability to guide conversations; opening up the problem space and shifting back and deducting when necessary</i> • <i>Work with personas. Let team members apply innovation roles to foster creativity, enthusiasm, and confidence</i> • <i>Sweeten the deal; Sell emotions</i> • <i>Deny negative Feedback</i> • <i>Prototype not too big projects</i> • <i>Use the dark horse approach at idea selection</i>
Integration	<ul style="list-style-type: none"> • Further elaborate selected ideas • Prepare a business plan "light" • Presentation of elaborated ideas • Initial business plan on 3-5 ideas 	<ul style="list-style-type: none"> • <i>Don't go from idea selection directly to a business plan.</i> • <i>Multiple prototyping iteration cycles are needed to test, refine, and further elaborate on the idea to reduce uncertainty and to get confident in having the right idea.</i> • <i>Test against reality and abduct</i> • <i>Prototype business models by using rough sketches, post-its, or act business models out in recorded skits.</i> • <i>Use different media to prototype depending on what kind of feedback you expect. The more finished your prototype looks, the less you are open to critical feedback. Also, the more finished your prototype looks, the more people will only add incremental improvements to your idea.</i> • <i>Show, don't tell</i>
General overall advice		<ul style="list-style-type: none"> • <i>Pitch already on day 2: set three cycles of the process over the course of the whole project</i> • <i>Anything worth learning has to be learnt at least 7 times => repeat it; stick in multiple scenarios</i> • <i>Set impossible deadlines => teambuilding</i> • <i>Foster cognitive and affective empathy</i> • <i>Instead of plan, plan, RE-plan, do, do RE-do</i> • <i>Build prototypes and sell it to the group</i>

5.4. The strength of Design thinking for business model design

5.4.1. Design thinking in the initiation phase

In the initiation phase usually the ecosystem of the focal firm is analyzed and change drivers are identified. Besides traditional methods applied, like customer surveys (marketing department), competitor analyses (corporate strategy) and technological forecasting (R&D department), design thinking can unleash additional innovation potential in the business model ideation phase by revealing potential customers' hidden needs. IDEO's CEO Tim Brown highlights that the key is to observe, to build empathy, to get insight, and thereby to uncover needs, which customers are not yet aware of and would therefore not express when simply asked (Brown, 2009, p.40). The frequently cited sentence of Henry Ford "If I'd asked my customers what they wanted, they'd have said a faster horse." depicts the importance of design thinking in the initiation phase (Brown, 2009, p.40). "The tools of conventional market research can be useful in pointing toward incremental improvements, but they will never lead to those rule-breaking, game-changing, paradigm-shifting breakthroughs that leave us scratching our heads and wondering why nobody ever thought of them before" (Brown, 2009, p.40).

When applying design thinking in the initiation phase it is important not to start from a narrow problem the focal firm is currently facing, since design thinking does not only explore solutions to specific, predefined problems, but always starts with an understanding of the problem itself – the problem space (Leifer & Steinert, 2011, 2014; Lindberg, Meinel, & Wagner, 2011). This is done in two iterative steps (see Figure 10). In step one the divergent exploration of the problem space takes place. Mainly qualitative data of customers, competitors, partners, and the focal firm is collected. This is realized by e.g. recorded interviews, pictures, videotapes, or soaking up the experience of doing business with a company by taking the role of a customer (Brown, 2009, p. 69). This phase is also often referred to as the analysis phase, in which different viewpoints and events are explored (Brown 2009, p. 69; Dunne & Martin, 2006). "Connecting" and building empathy to the people and/or companies observed helps for the second step, namely the synthesis, where observations are converted into insights (Brown 2009, p.70; Leifer & Steinert, 2011, 2014; Martin, 2009, p. 30). Empathy plays a crucial role in decoding, synthesizing and converting

the masses of raw data into meaningful insight (Brown, 2009, p. 70). The most interesting insights are drawn from what people do not say (Brown, 2009, p.43). Converting the data into patterned characteristics helps to translate the change problem and to make a design problem formulation, the baseline for ideation (Brown, 2009, p.70).

By observing and building empathy for patients with chronic illness or long-term treatments, the Boston based start-up Pillpack realized that receiving and organizing medication is often a complex undertaking. Patients have to take prescriptions to local pharmacies, order the medication and, if not in stock, pick it up on a second visit. Further, they have to be aware of taking partially multiple medications with the right doses at the right time. Finally, they have to be conscious of obtaining new medications before they run out of their existing ones. Following a human-centered approach, Pillpacks' business model consists of personalized, pre-sorted medication shipped to the patients' doorstep paired with a proactive refill management. This all becomes possible, through communication with the respective doctors and insurance companies. Keeping the human touch, Pillpack offers a 24/7 phone support, where pharmacists answer questions patients might have with regards to their medication, insurance, and doctoral prescriptions. Their revenue model is based on a monthly subscription fee.

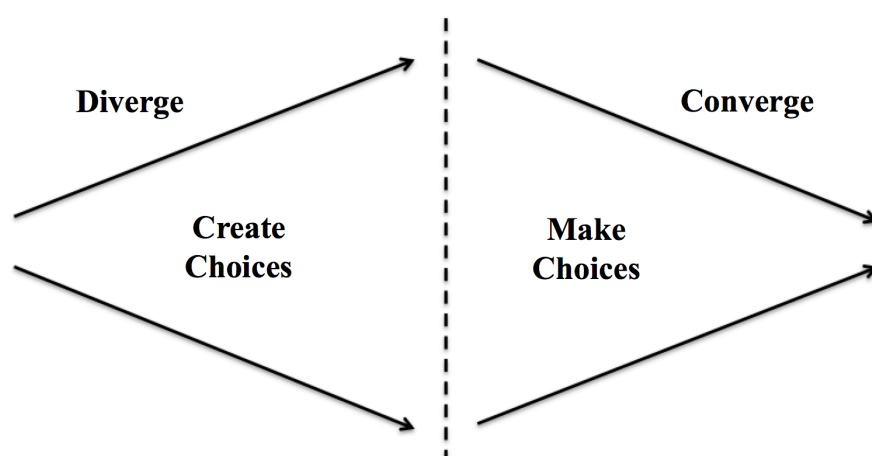


Figure 10: Divergent analysis & convergent synthesis

Source: Brown, 2009, p. 67

Checklist for the initiation phase:

- Observe with a child's eye. Make yourself free from existing beliefs.
- Ask "why?" and "why not?" questions.
- Instead of using highly specified questionnaires and approaching thousands of people, it is more valuable to find the right people, who do something different. These people are worth concentrating on. Typically they are not the key customers or closest partners, as those will only confirm the known.
- Building empathy and connecting to what the people feel, will reveal their latent needs.

5.4.2. Design thinking in the ideation phase

The center of the ideation phase is the generation of new ideas that tackle the design problem identified in the initiation phase. Design thinking does not offer a compilation of creativity methods that automatically lead to great ideas, when applied. The additional value of design thinking in the ideation phase lies in complementing these methodological approaches by getting innovators into the state of mind to being creative. It is all about teamwork, leadership, and innovation culture. Innovation is a team sport and so do great ideas evolve only when teams work together with creative confidence and optimism (Brown, 2009, p.76).

In contrast to the traditional idea funnel, where a great number of ideas are developed, continually selected and reduced to a few by following stage-gate processes (Cooper, 2008), the design thinking process "looks like a rhythmic exchange between the divergent and convergent phases, with each subsequent iteration less broad and more detailed than the previous ones." (Brown, 2009, p. 68). In other words, the process of design thinking iterates *multiple* times between the generation of a variety of new ideas out of existing information - divergent thinking - and the logical deduction to a unique solution - convergent thinking (Schar, 2011, p. 7; Guilford, 1967, p. 220).

Mark Schar (2011), lecturer at Stanford's Center for Design Research, explains the challenging dance between diverging and converging in the innovation process and demonstrates the additional value of a 'pivotal thinking' team leader. His research suggests that in multi-disciplinary teams, members of different functions show either divergent or convergent problem solving styles based on their cognitive capabilities.

While e.g. marketers favor a rather intuitive (divergent) style, members of corporate finance on the other hand might tackle problems in a more analytical (convergent) way. This leads to ‘representational gaps’ in joint discussions about innovative ideas and inhibits knowledge sharing, as team members perceive problems only from their individual perspective and show limited interest in differing problem solving styles. For instance, marketing and sales managers like to focus on the customer while controllers prefer to argue with numbers. Misunderstandings, turning down each other’s ideas, and frustration are often the results. Schar (2011) proposes that a design thinking coach can close these mental gaps, by pivoting as a team leader between convergent and divergent problem solving styles. This can be achieved e.g. by guiding to a single idea at first and then opening up the problem space by asking generic questions to trigger multiple, more creative answers and then shifting back to the convergent mode by asking questions to clarify, confirm, and reduce options again.

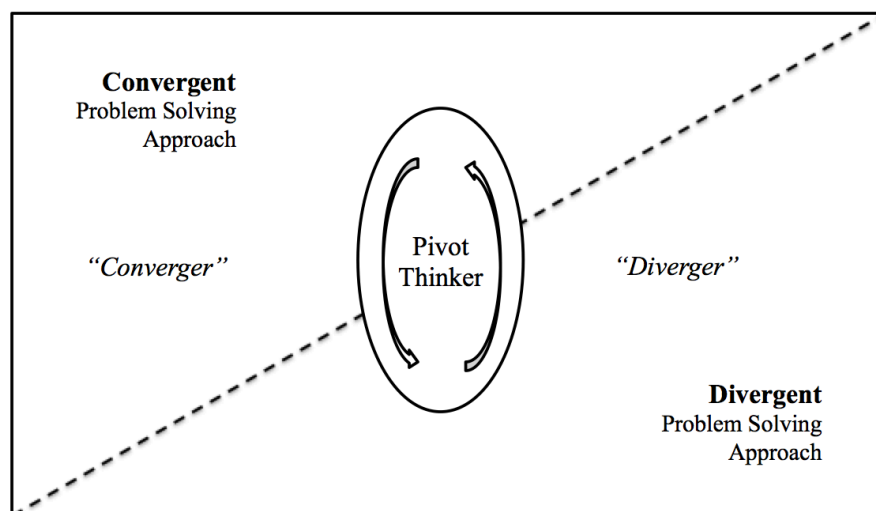


Figure 11: Conceptual model for a Pivot-Thinker

Source: Schar, 2011, p. 14.

The design thinking coach usually iterates in multiple cycles until the team feels confident enough to have generated suitable ideas to meet the design challenge. Schar (2011) shows empirical evidence, that ‘divergers’ and ‘convergers’ share more information for group decision making and also share this information earlier, when coached by pivotal thinking team leaders, which proves their moderating role.

Not only team leaders should be aware of the cognitive abilities of the idea generating team, also team members can use people-centric tools to encourage constructive discussion about ideas. Kelley and Littman (2008) propose 10 fictional cognitive roles that people can adopt and play when discussing new ideas. These can be grouped in three categories: The anthropologists, the experimenters, and the cross-pollinators depict learning personas, who continuously strive for new ideas outside the firm's current beliefs and views to explore new insights and to break out of the firm's dominant-logic. The organizing personas comprise the hurdlers, the collaborators, and the directors. Their primary goal is to push ideas forward by getting management attention, resources, and align firm politics. The third group of personas is represented by the building personas. The experience architect, the set designer, the caregiver, and the storyteller all have in common that they orchestrate the insights and the power of learning and organizing personas in order to achieve innovation. Playing certain personas allows innovators not only to identify potential customers and their needs, but also encourages them to create and follow their ideas with confidence and push them forward. Most important, the persona technique strengthens the power of innovators to team up and argue against niggers, who constantly criticize young ideas and are present in almost every innovation project.

When it comes to selecting the most promising ideas, design thinking recommends a counterintuitive way, known as the 'Dark Horse' approach. Larry Leifer, Director of Stanford's Center for Design Research stresses the importance not to go for the most obvious solution (Leifer, 2012). He explains the dark horse approach as a metaphor derived from horse racing, where there is one horse with only little chances of winning and hence no one bets on it. However, he argues that if this horse wins, it really pays off. Transferred to idea selection, there is always one idea, which seems too different from the obvious solution, so there is no trust in the group that the idea can be turned into reality successfully. However, if it works, this idea is going to be the break-through. Leifer explains that design thinking gives managers, who are used to decision making primarily with numbers and evaluation sheets, the permission to go for an idea, which is not safe, which they don't trust to be successful. He further argues, that the approach is very powerful and effective also for pedagogically reasons. It prevents premature closure and once the innovators tested an idea they

thought they could not into reality in the beginning and then realize that they can, they become crazy about going for the break-through option.

Checklist for ideation:

- Create a lot of choices in order to find the breakthrough idea.
- Iterate multiple times between convergent and divergent thinking.
- Prevent premature closure.
- Instead of judging the ideas of others, it is important to build on them to push them forward.
- Using personas can cultivate an innovation spirit in the team.
- Pivotal thinkers as team leaders are able to manage representational gaps between team members.
- Being optimistic and confident during the ideation phase is important as it triggers the exchange of radical ideas.
- Following the Dark Horse approach means going for the game changer. The most obvious solution often not the most innovative one.

5.4.3. Design thinking in the integration phase

Once innovative business model ideas have been created and preferences have been made to focus deeper on certain ones, further elaboration and integration begins. Design thinking emphasizes that the biggest mistake at this stage would be to optimize one preferred idea using linear steps – steps that lead towards direct implementation. Meinel and Leifer (2012) argue that design thinking is not an ideation challenge; it's a synthesis challenge. Their research suggests that linear steps would be only recommendable, if the innovation team is certain to have found the right idea. However, the preferred idea generated during ideation depicts rather a solution space than the solution per se. Multiple prototyping iteration cycles are needed to test, refine, and further elaborate on the idea to reduce uncertainty. Figure 12 portrays Meinel and Leifer's (2012) hunter-gatherer model with point A as the starting point and point B as the dark horse idea. Both points are surrounded by vertical and horizontal error bars, which represent uncertainty about the initial understanding of the problem (A) and the targeted solution (B). The model illustrates that during the

elaboration of a design idea the innovation team deviates multiple times from the direct path between points A and B (dashed line). Every deviation takes place after a prototype has been built, tested against reality, and new discoveries have been made. Learning from these reality checks leads the innovation team to abduct and to adopt its path to the solution space. Figure 12 exemplifies that the big idea solution at the end of the journey is not point B, the dark horse idea initially suspected. Instead, after multiple iteration cycles and checks the big idea is represented far off at point B'''. The model clarifies that the innovation journey of a design thinker can be compared to a hunter gathering information. It emphasizes that multiple non-linear iterative steps characterize the process.

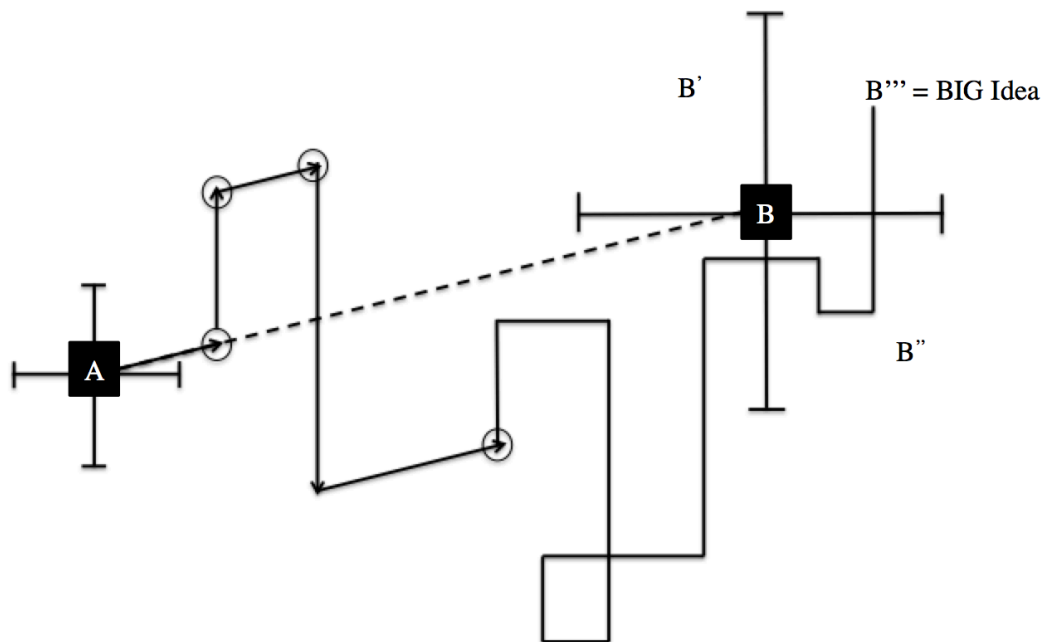


Figure 12: Hunter-Gatherer Model for the representation of a design thinking Journey
Source: Adapted from Meinel & Leifer, 2012

The above model shows that design thinking is a prototype-driven approach. Prototyping intangibles, like business models, is extremely challenging, but once achieved it gives the business model idea a shape, helps to better understand and communicate it, as well as to receive valuable feedback from it. Brown (2009, p.87) highlights the importance to shift from abstract to physical and back, as it unlocks imaginations and thereby strengthens exploration. He recommends various ways of

prototyping intangibles – from drawing rough sketches or using post-its to acting out different business model scenarios as skits. Role-plays add value, as they help innovators build empathy to all business model participants. Another recommended way to make business models tangible is to develop whole “customer journeys”, where a fictional customer is taken through all stages of a new business model scenario; from the first interaction with the respective company through all relevant “touch points” in order to experience the value of the innovative business model (Brown, 2009, p.87).

Brown suggests to prototype “quick and dirty”, which means to build rough and cheap prototypes. He argues that this has two reasons. First, overinvesting in prototypes makes innovators resistant to critical feedback as they already put a lot of effort in the idea and consequently tend to stick to it, although it might be only a mediocre one. The goal of prototyping is to get feedback and drive an idea forward. This leads to the second reason. If a prototype looks too “finished” the feedback will most likely entail only small adjustments or suggestions pointing towards direct implementation.

The use of different types of media for building prototypes can play a crucial role for receiving feedback, managing it correctly, and using it for further exploration of the idea or refinement of the prototype. Edelman and Currano (2011) introduced a media-models framework for product and service development, which distinguishes between two dimensions of shared models: resolution and abstraction. Resolution characterizes the degree of refinement or in other words the level of granularity of the shared representation. Abstraction on the other hand depicts the level of simplicity of the shared model.

Edelman and Currano (2011) propose that the use of rough sketches and rough prototypes leads towards paradigmatic changes, while models with a high level of resolution drive only parametric changes. Design thinkers can make use of different media in order to frame discussion and lead a design strategy. Rough sketches and rough prototypes (ambiguous media) encourage divergent conversations with lots of possible changes, while high-resolution process models and CADs (mathematized media) urge convergent discussions with a tendency towards little changes. The underlying argument is that the use of different media implies different levels of completeness of the design idea and therefore triggers different kinds of feedback.

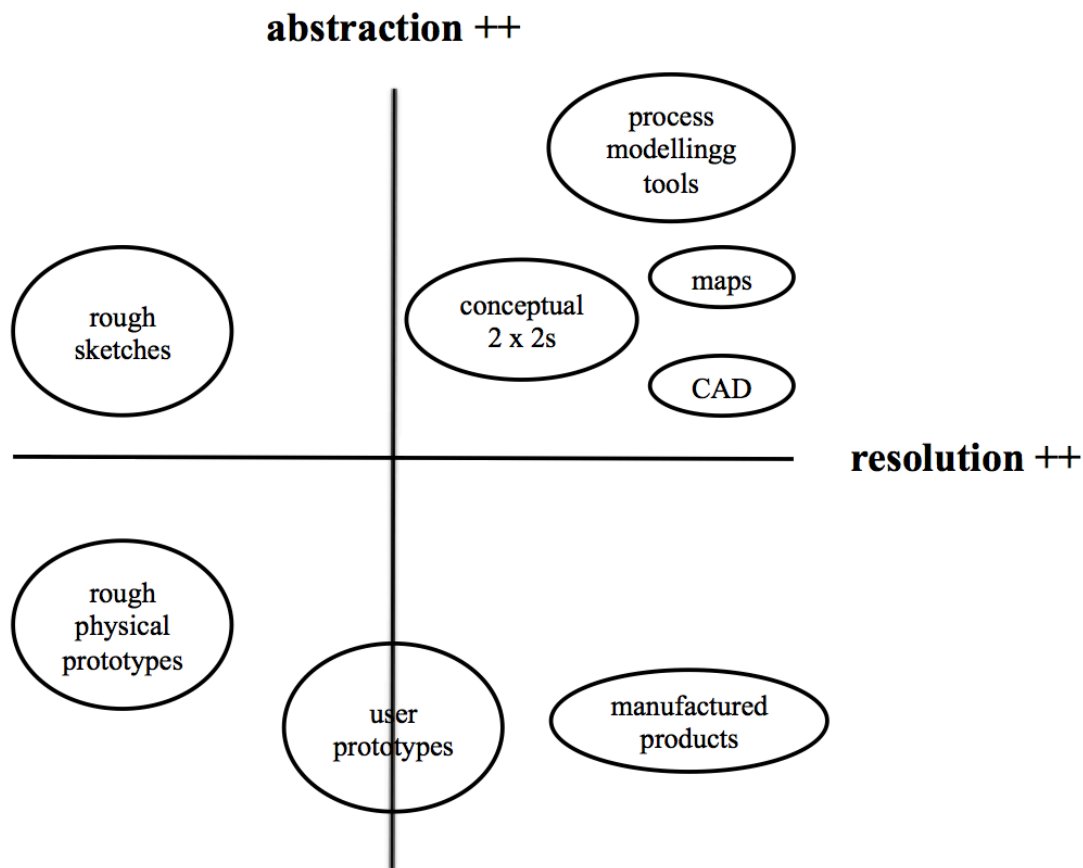


Figure 13: Media-models framework

Source: Edelman & Currano, 2011

Design thinkers can also use both ambiguous and mathematized media together in so-called hybrid media models, where rough sketches are combined with photographs, drawings, and text. Hybrid models allow for flexibility of exploring the relationships of different elements to another. Design thinkers can use this framework to guide conversations dependent on how confident they feel about their idea, what kind of feedback they are requesting, and how they want to communicate their concepts.

Checklist for integration:

- Integrate decision makers not only in the first stages of the project. They should have physical interaction with potential customers and receive first hand prototyping feedback.

- Do not overinvest in high-resolution prototypes in the beginning. It will trigger only incremental feedback and you will resist critical feedback, because you already put too much effort in the prototype. Thus: Prototype quick and dirty.
- Iterate multiple times during the integration phase. Design thinking is not an ideation challenge; it is a synthesis challenge. The initial idea from the ideation phase will change during integration.
- Be open to critical feedback. Multiple iterations should be considered as good not a bad sign.
- Use different media dependent on how you want to lead the discussion. Use rough sketches and rough prototypes for divergent discussions and more sophisticated models for convergent conversations.
- Be a hunter and gather information about the idea.
- Make use of different prototyping ways, by acting models out and creating customers journeys. It is important that customers experience the new concept.

5.5. Summary

The study revealed that the design thinking approach can add value to the Business Model Navigator in multiple ways.

First, the initiation phase of the Business Model Navigator, where the status quo business model is described, change driver are identified, and the business ecosystem is analyzed, the human-centered design thinking approach sharpens the perspective of the business model innovation team by observing the customer and building empathy. Synthesizing these manifold data sources helps to uncover latent customer needs and to clarify the change problem and to formulate the design challenge.

Second, in the ideation phase the design thinking approach enhances the Business Model Navigator by complementing the pattern confrontation method through enhancing creativity with a pivotal thinking team leader. The pivotal thinker is able to guide the team iterating multiple times through divergent idea creation phases and convergent deducting to single solutions. Further, he can close representational gaps that emerge because of team members' differing problem solving styles based on their cognitive capabilities. This positively impacts teamwork, innovation culture, optimism

and creative confidence. Furthermore, design thinking offers the use of ten fictional innovating personas that team members can play, which encourages them to create ideas and push them forward with confidence. For idea selection, design thinking offers the dark horse approach, which represents a fundamentally different way of idea selection that management in large corporations are used to.

Finally for integration, design thinking advances the Business Model Navigator by recommending rapid prototyping of business models, testing them against reality and learning from the feedback for multiple redesign phase until uncertainty is reduced to a level at which the company feels confident to launch the new business model. Design thinking also gives advice on which media to use for prototyping and how to use it to receive the type of feedback (incremental/ radical) needed.

It can be concluded that business model innovation and design thinking complement one another and it would be interesting to explore the impact of a combined approach in the creation of innovative business models from a practical as well from a research perspective.

6. References

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7. Curriculum vitae

Amir Bonakdar

Born on August 21, 1981 in Clausthal-Zellerfeld (Germany)

Education

- 02/2014 – 01/2015 **Center for Design Research, *Stanford University***
Visiting Researcher
 Host-Supervisor: Prof. Dr. Larry Leifer
- 03/2011 – 01/2014 **Institute of Technology Management, *University of St. Gallen***
PhD in Management
 Supervisor: Prof. Dr. Oliver Gassmann
- 10/2001 – 04/2008 **School of Business and Economics, Friedrich Alexander
 University Erlangen – Nuremberg**
Diplom-Kaufmann (Diploma in Business)
- 02/2005 - 09/2005 **School of Economics and Management, *Tongji-University***
MBA program, semester abroad

Work Experience

- 03/2011 – 01/2014 ***SAP (Switzerland) AG***
Research Associate
- 08/2008 – 02/2011 ***SAP Deutschland GmbH & Co. KG***
Consultant

Awards & Scholarships

- 2014 ***One of the best papers at the Annual Meeting of the Academy
 of Management***
- 2013 ***Scholarship of the Swiss National Science Foundation***
- 2009 ***Outstanding Diploma Thesis Award of the Louise-Prell
 Foundation***