Solution providers' open business models: a view on partner networks, customer centricity, and business model performance

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Abstract

Research has highlighted the importance of open business models, yet concepts which explain factors influencing the performance of open business models are quite rare. Here, we build on network theory and investigate how the structural, relational, and cognitive dimension of networks - conceptualized as the network between a manufacturing company and its external service providers - influence the performance of open business models. We study the special case of solution providers which combine their own products with externally sourced services into solutions to better meet customer needs.

A comparative case study with three successful solution providers suggests that the three network dimensions influence the performance of open business models and that the relationship is contingent on the level of customer centricity. Business models with low customer centricity need another network configuration with their partners in order to be successful than business models with high customer centricity.

Key Words: open business model, solution provider, customer centricity, business model performance, networks, business model

1. INTRODUCTION

The business model, as an increasingly popular unit of analysis, has the purpose of explaining the logic of how firms "do business" (Zott, Amit, and Massa 2011). In doing so, the concept is not restricted by firm boundaries: previous research in the field has emphasized the fact that business models span firm boundaries and that they are embedded in the broader network of the focal firm (Chesbrough and Rosenbloom 2002; Osterwalder et al. 2005; Zott and Amit 2009; Teece 2010; Mason and Spring 2011). Zott, Amit, and Massa (2011: 18) hence locate the business model concept *"between the firm and the network"*, where it provides a holistic and system-level view of value creation and capturing. Researchers on open business models outline even more explicitly the need for external collaboration by arguing that open business models lead to value creation and capturing by "systematically collaborating with outside partners" (Osterwalder and Pigneur 2010: 109). They describe in detail how the exchange of ideas and intellectual property with partners can create additional value (Chesbrough 2006; Chesbrough 2007).

As a consequence of the opening up of business models, external sourced services become increasingly important. As Ehret and Wirtz (2010) state, business services are crucial for opening up business models. This is of particular relevance for manufacturing companies which face the organizational challenge of becoming solution providers. A solution provider does not just manufacture stand-alone products but bundles its products with related services into solutions that solve customers' problems (Galbraith 2002; Davies, Brady, and Hobday 2006). For these firms, utilizing services that are provided by partners in the network can be an attractive means of achieving successful integrated solutions (Windahl and Lakemond 2006; Helander and Möller 2008; Martinez et al. 2010) and in turn successful open business models.

But how can partners who complement products to a solution be integrated in value creation and capturing? How should the relation with them be set up? How many partners are

necessary? How frequent should the interaction take place? Who should manage the customer relationship? How customer centric should the business model be? These business model design questions are only partially answered in current literature. General business model literature emphasizes the importance of networks but, to stay generalizable, does not provide more concrete guidance. The research stream around open business models describes benefits of collaborating with outside networks to achieve innovation and enable others to capture value from own IP. The focus, however, is on required changes to the focal firm's business model, not on partner network design. (Chesbrough 2006, 2007). Scholars in the solution provider field have analyzed partner networks in the context of the development of new integrated solutions (Windahl and Lakemond 2006) and required management capabilities (Ivens et al. 2009) but not in their actual setup and logic required for solution delivery.

In order to close the identified gap, we use insights from network theory and extend literature on open business models. Network theory has shown that a network of relations of firms produces a range of positive results such as information benefits (Granovetter 1985; Burt 1992; Hansen 1999), efficient knowledge transfer (Uzzi 1996, 1997), access to resources (Gnyawali and Madhavan 2001), superior performance (Powell et al. 1999; Zaheer and Bell 2005), and increased innovation (Schilling and Phelps 2007). A firm's network typically comprises customers, suppliers and other partners, such as complementors (Hamel 2000: 95 et sqq.). We investigate three forms of network dimensions - relational, structural, and cognitive - across three firms pursuing open business models that vary in the level of customer centricity. Our purpose is to explain how the three network dimensions, conceptualized as centrality, tie strength, and shared vision, influence the performance of open business models which vary in the level of customer centricity.

The central argument is that firms pursuing open business models need to configure their networks to service partners differently when a business model is more or less customer centric. Business models that are more customer centric - as observable through close

collaboration, frequent contact, and a customer-centric organizational structure - require a different network configuration with their external service partners than business models that are less customer centric.

Our findings suggest patterns which are new and to some extent even counter-intuitive to existing theory. We argue that, with a certain network configuration, open business models with low customer centricity can be as successful as open business models with high customer centricity. More specifically, we show that many weak ties to service partners combined with a high level of shared vision can substitute or even outperform the benefits of direct customer ties. Scholars from both business model (e.g., Johnson, Christensen, and Kagermann 2008; Teece 2010) and solution provider (e.g., Galbraith 2002; Davies et al. 2007; Cova and Salle 2008) backgrounds generally attribute high importance to customer focus and customer closeness for business success.

This paper contributes to the literature on open business models and more broadly on the literature on business models in general. We selected three network dimensions and analyzed their effect on the performance of open business models, depending on the level of customer centricity. Although literature on business models has repeatedly outlined the importance of networks, so far research lacks a detailed description of how networks influence the performance of open business models. As our research shows, the relationship between networks and business model performance is not as straightforward: in some cases a low level of one of the three network dimensions can even be more beneficial for the performance than a high level of the network dimensions.

The remainder of this paper is structured as follows: The next section more deeply analyzes the theoretical background necessary for our line of reasoning, namely business model literature, literature on customer centricity, and network theory. Next, the cases of three solution providers are presented and analyzed with regards to customer centricity of their open business models and the structure of their partner networks. The section that follows

develops a framework which explains how the relationship between the three network dimensions and the performance of open business models is contingent on customer centricity. The paper concludes by stating the implications and conclusions of our findings.

2. THEORETICAL BACKGROUND

2.1 Business Models

In general, the business model can be defined as a unit of analysis to describe how the business of a firm works (e.g., Amit and Zott 2001; Magretta 2002; Morris et al. 2005; Teece 2010; McGrath 2010). Business model literature has not yet converged to a common definition of a business model, neither does it provide a well-defined theoretical construct (George and Bock 2011). The business model is often depicted as an overarching concept that takes notice of the different components a business is constituted of and puts them together as a whole (e.g., Amit and Zott 2001; Chesbrough and Rosenbloom 2002; Morris et al. 2005; Johnson et al. 2008; McGrath 2010; Demil and Lecocq 2010; Osterwalder and Pigneur 2010) - a notion nicely formulated by Magretta (2002: 91): *"Business models describe, as a system, how the pieces of a business fit together"*. Often named components are, for example, the value proposition (e.g., Morris et al. 2005; Teece 2010), the customer (e.g., Morris et al. 2005; Teece 2010), or the performed activities and transactions (e.g, Amit and Zott 2001; Afuah 2004; Zott and Amit 2008).

A central virtue of the business model is that it allows for a holistic picture of the business by combining factors located inside and outside the firm (Teece 2010; Zott, Amit, and Massa 2011). Put differently, the business model points to the interplay between the internal dimension of a business, such as the firm's resources and activities, and the external dimension, such as the firm's customers and partners (Chesbrough and Rosenbloom 2002; Morris, Schindehutte, and Allen 2005; Johnson, Christensen, and Kagermann 2008). In this regard, it is often referred to as a boundary-spanning concept that explains how the focal firm

is embedded in and transacts with its surrounding ecosystem (e.g., Shafer et al. 2005; Zott and Amit 2008, 2009; Teece 2010). The task most commonly attributed to the business model is to explain how the focal firm creates and captures value for itself and its various stakeholders within this ecosystem (e.g., Afuah and Tucci 2001; Amit and Zott 2001; Chesbrough and Rosenbloom 2002; Magretta 2002; Shafer et al. 2005; Chesbrough 2007; Björkdahl 2009; Teece 2010).

Given its holistic view of the firm and its surroundings, the business model has touch points with many different fields of research. For instance, Zott and Amit (2008) link business models with strategic marketing and, in later work, examine the concept's interrelations with e-business/IT, strategy, and innovation management (Zott, Amit, and Massa 2011). Other authors have linked business models with ideas from an even broader base, such as supply chain management (Chapman, Soosay, and Kandampully 2003; Girotra and Netessine 2011) or entrepreneurship (Zott and Amit 2007; George and Bock 2011). In the remainder of this section, we focus on elaborating the touch points between business model literature and two concepts that are of particular relevance for understanding solution provider business models: customer centricity and partner networks.

2.2 Customer Centricity

Business model scholars frequently stress the fact that the customer should be at the center of the business model and that a business model's primary goal is to create value for the customer (e.g., Johnson et al. 2008; Teece 2010). Amit and Zott (2001: 513) observe that business models *"are often customer centric in their design"* and that customers in some cases even engage in value co-creation. Teece (2010: 172) emphasizes customer centricity even more by stating that a business model *"reflects management's hypothesis about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit."*

As a part of the business model, customer centricity is embedded into the broader context of the focal firm's logic and its ecosystem. Yet, the notion that customers should be at the center of a firm's efforts is not new - Shah et al. (2006: 113) state: *"the concept of customer centricity and its benefits have been discussed for more than 50 years."* There is no formal definition of the concept that would allow to immediately measure the level of customer centricity of an organization. The general theme is centered around the notions that (1) customer-oriented values and beliefs should guide actions of the organization from the top (Webster 1988), (2) the structure of the organization should have dedicated customer-facing units (Day 2006), and (3) the focus of the organization should be on customer needs discovery and satisfaction (Gummesson 2008). We hence conclude that a highly customer-centric business model is characterized by customer-focused structures and processes inside the firm and close collaboration, frequent contact, and direct connections with many customers in its outside network.

Customer centricity is frequently contrasted with a product-centric strategy and portrayed as being the superior approach (e.g., Hax and Wilde II 2001; Shah et al. 2006). As Shah et al. (2006: 122) put it: *"customer centricity is a necessary condition for 21st-century firms to succeed in the marketplace"*. This statement is in line with many authors from the solution provider field, who frequently highlight customer closeness and customer focus as important success factors for solution providers (e.g., Galbraith 2002; Davies et al. 2007; Cova and Salle 2008). Business reality follows their perception: A study by Day (2006) shows that "implementing a solutions strategy" is the most frequently cited rationale for a customer-centric realignment of organizations. Hax and Wilde II (2001), finally, coin the "total customer solutions" strategy and thereby directly link customer centricity with solution business. Consequently, one should expect high customer centricity to be a key characteristic of successful solution provider business models.

2.3 Networks

Networks are perceived as a critical element of business models (e.g., Morris et al. 2005; Osterwalder et al. 2005; Shafer et al. 2005; Zott et al. 2011). Early definitions, such as the one given by Dubosson-Torbay et al. (2002: 7), already highlight this fact: *"A business model is nothing else than the architecture of a firm and its network of partners for creating, marketing and delivering value [...] to one or several segments of customers in order to generate profitable and sustainable revenue streams."*

While business model scholars notify the relevance of networks for business models, their explanations so far remain very narrative lacking casual relations between various network dimensions and business model outcome variables, such as performance, or value creation. Osterwalder (2004: 89), for example, describes the "partnership network element" of his ontology as an agreement between independent companies around capabilities, resources, and activities. Brousseau and Penard (2007) see the network more in a broader role, influencing the economics of intermediation, assembling, and knowledge management of digital business models. Zott and Amit (2009), finally, argue that the business model's relationship with networks is to answer the question of how the firm *"structures its destiny within the context of the value networks within which it exists."* (ibid.: 266).

Research in network theory has shown in multiple studies that a network of relationships produces a number of positive outcomes, including increased access to novel and diverse information (Granovetter 1985; Burt 1992; Hansen 1999), increased access to resources (Gnyawali and Madhavan 2001), more efficient knowledge transfer (Uzzi 1996, 1997), heightened power and control (Brass 1984; Brass and Burkhardt 1992), increased legitimacy and understanding for the products (Tsai and Ghoshal 1998), increased innovation (Schilling and Phelps 2007), and increased performance (Powell et al. 1999; Zaheer and Bell 2005).

Such networks are typically characterized along three dimensions. The structural dimension refers to the position of a focal firm relative to the others in the network (Gulati

and Gargiulo 1999; Gnyawali and Madhavan 2001) and is often conceptualized as centrality, the number of direct ties the focal firm has in relation to the total number of possible interactions. The relational dimension describes the quality of the relationships, including frequency and closeness (Uzzi 1996; Uzzi 1997) and is often measured as tie strength including weak and strong ties as the two extremes. The third dimension, the cognitive dimension, reflects the similarity between the interpretations, mental models, and worldviews of the focal firm and its partners in the network (Tsai and Ghoshal 1998). It is mostly conceptualized as shared vision.

3. CASE STUDIES

3.1 Methodology

A comparative case study design is used to gain deep understanding of the area of interest and to empirically derive propositions from a cross-case comparison. We assume a static view of the business model and analyze its specific design in case of three different firms which fulfill the criteria of our research interest in open business models: product companies that offer solutions to corporate customers through a network of service partners. The purpose of our analysis is not to describe the companies' business models in full detail. Instead, we focus on those aspects that are important to understand how they employ partner networks in solution delivery and how customer centricity reflects in their business models. As proposed by Eisenhardt (1989), we specifically look at cases that span the bandwidth of possible business models within this frame. To study the different models in this particular set shall allow us to draw conclusions which are of practical relevance for other firms that are looking into embracing similar open business models to enter the solution business.

For data collection, we conducted multiple semi-structured personal interviews per case with company representatives from general management, business development, and partner management. The interviews lasted between one and two hours each and were focused on

understanding the firms' open business models in detail, collecting figures for network characteristics calculation, and identifying the reasons that have led the firms to design their business model in the way it is today. The interviews were transcribed to allow for subsequent analysis; specific questions were clarified in follow-up e-mails. To triangulate the interview-generated data, we exploited other data sources on the companies such as internal presentations and partner-focused documents that were provided to us by our contacts, as well as publicly available information that we found through own research.

The following subsections present the three cases in our sample: 3M Services, SAP, and Geberit. Our within-case analysis aims at understanding the detailed characteristics of the business models under study, with a focus on the business model's level of customer centricity and the split of activities between the actors in the network. This allows us to isolate the underlying business logic of each open business model, which will be further investigated and compared in the cross-case analysis in section 3.5.

3.2 3M Services

3M Services, a subsidiary of global brand leader 3M's Germany branch, was incorporated in January 2010 to tap the market of solutions around 3M's wide range of products. The move into solution business was triggered by regular requests from corporate customers who demanded 3M support in applying 3M products. Being a strong "product company", 3M decided to develop a new business model for solutions that would rely on a network of partners for service delivery.

The open business model of 3M Services can easiest be described by examining an example solution - the application of films to cars. Different kinds of films can be applied to an automobile for reasons such as sun or damage protection, special designs, or personalization. The application process requires extensive know-how that a typical car dealer does not have in-house. 3M's solution is based on a web-based platform for the German dealer network of a big automaker. Car dealers specify which film they want to be applied,

where, and when - 3M Services takes care of the rest. For service delivery, the company coordinates a nationwide partner network consisting of 30 certified film applicators. The applicators are subcontracted, hence 3M Services acts as the single point of contact to the car dealer and takes full responsibility for solution delivery.

While not all of its solutions are that standardized, the same general business logic applies to all of the company's solutions that are offered within five different business areas. 3M Services defines and sells the solutions, owns the customer relationship, acts as a coordinator, and covers administrative processes such as order handling and billing. A network of more than 50 partners delivers the service part of the solution to its customers. Partners only collaborate with 3M Services for solution definition in case of very specific solutions that are delivered with an exclusive service partner.

3.3 SAP

SAP is a Germany-based software company that was founded in 1972. Today, the company is the market leader in enterprise application software with more than 176'000 corporate customers and ranks among the biggest five software companies worldwide. At the historic center of SAP's product portfolio is its enterprise resource planning software SAP ERP - a complex system that helps customers run, manage, and track all processes across the enterprise. Customers buy a software license from SAP and typically also sign a maintenance contract that ensures regular updates and fixes.

Due to scope and complexity of the task, most customers don't have the resources and know-how that is required to implement the software without external support. Expenses for services that turn the product into a running solution can exceed product costs considerably for large-scale implementation projects. Service business thus is a very attractive field. SAP, however, employs an open business model in the service area and supports external partner companies that provide consulting and integration services. SAP's own market share in service business is not outstanding, huge shares are held by global partners such as Accenture,

Capgemini, or IBM Global Services. The partners often have a stronger relationship with the customer than SAP has itself. The main reason for SAP to choose an open business model was to increase the market penetration of SAP software, which yields higher margins than the associated service business. Every partner that markets a SAP-based solution to a customer automatically pushes SAP's software and maintenance sales.

Yet, SAP is not just a software manufacturer that is not interested in service and solution business. The company runs a huge global "Ecosystem&Channels" department that, among other tasks, takes care of relations to the company's 1700 service partners. Partners can - but don't have to - become "certified partners" in different levels, book training classes at SAP, and are equipped with resources such as the ASAP project methodology that help them deliver better solutions. Partners also typically join SAP's vast developer and business process expert communities and list their services in SAP's EcoHub directory to find new customers. The split of duties between SAP and its partners is not always clearly defined and a certain degree of "coopetition" (cf. Bengtsson and Kock 2000) is obvious in some areas.

3.4 Geberit

Geberit is a Switzerland-based manufacturer of sanitary and piping systems that was founded in 1874. Today, the company has 6000 employees and sells in more than 100 countries. Geberit's products are mainly hidden "behind the wall" of buildings and make sure water is available where and when needed. This puts the product out of the immediate attention of the end customer who is interested in a solution - water supply in kitchens, bathrooms, or factory floors of newly built or renovated apartment, hotel, or industrial buildings.

Beginning with its IPO in 1999, Geberit has developed an open business model around this fact and achieved major success in its European core markets. As the end customer is not interested in product characteristics or brand but only in the final solution, Geberit focuses its efforts on those that turn the product into a solution and thereby decide about the product to

use. The company maintains strong relations to architects, plumbers, and sanitary planners, who design and deliver the solution to the customer. These partners have access to a wide choice of free-of-charge Geberit offerings such as training classes for all of their employees, partner events, planning software, and remote and on-site support in case of problems. These offerings, combined with a product design that caters to partners' needs and allows for the use of special tools for easier application, turn partners into "Geberit shops" who can deliver solutions faster and better if they apply Geberit products. The offering is attractive to professionals in the business and has turned Geberit into a major player with a strong market position in its core European markets.

Geberit's actual customers, i.e. wholesalers for construction material, react to the strong market pull by listing Geberit products in their stores. Consequently, a large part of Geberit's sales force can focus on maintaining and extending relations to partners. Partners are by no means bound to Geberit, they could switch to a competitor's products at any point. However, by putting them at the center of the business model, Geberit helps them deliver better solutions to the end customer. The company thereby creates a win-win situation that ensures its products achieve a high share in a very dispersed market.

3.5 Cross-Case Comparison

In all three cases that we analyzed, the firms managed to innovate their business model by completing their pure product offering to a solution through a service offering. Instead of delivering services on their own, all three firms rely on externally sourced services. Despite these commonalities, we identify significant differences across the employed business models with respect to the level of customer centricity and interactions with the network of service partners.

When compared to the other two cases, the highest customer centricity must be attributed to 3M Services' business model. The unit was deliberately incorporated as a subsidiary to act as the single point of contact for solution customers - and, as such, is the only one in our set to

have this feature. 3M Services has close relationships and frequent contact with all solution customers as it is directly involved in the organization of solution delivery. The role of partners in the customer relationship is primarily focused on delivering a high end service that is defined, sold, and billed through 3M Services.

Partners are specifically selected by 3M Services based on regional and quality criteria. Only a small fraction (roughly 5%) of potential partners has a contract with 3M Services. They are paid per case or according to time and material, depending on the degree of service standardization. 3M Services does not perceive the management of the customer relationship and the coordination of delivery partners, which are distinguishing features of their model, as too resource consuming or limiting. Representatives see the success of their business model "limited on the customer side", meaning the solution market in their area is small enough to be managed centrally.

SAP, in contrast to 3M Services, does not own customer relationships exclusively and employs a less regulated approach for its partner management. Although the company maintains a relationship to all of its customers through its sales force, the interaction is characterized by product-related license and maintenance contracts. Partners offer implementation, and thus the service part of the solution, under their own flag and are the customer's first point of contact in many cases. To drive product sales and increase market share, SAP's business model is open to any partner who wants to become an SAP systems integrator. Virtually any of these integrators are hence part of the company's official partner network. Yet, there are also many systems integrators that specialize in other vendors' products and do not offer SAP-related services.

As a downside of the "dual" customer relationship, which is maintained by SAP and its partners, our contacts mention diverging interests in solution delivery: partners are interested in complex and service-intensive implementation projects, whereas SAP wants to achieve low total costs of ownership to convince prospective customers. Quality issues also tend to

redound upon SAP, independent of the real culprit. Competition between partners and "coopetition" through SAP's own service division help reduce these effects.

In terms of customer centricity, Geberit's business model goes one step further down the scale than SAP's. The company does not maintain relationships to solution customers at all - interactions with them are the responsibility of partners in the network. This allows the company to focus exclusively on its partners' needs and to support partners with services that enable them to design and market Geberit-based solutions more successfully. The end customer indirectly pays for these supporting services through a higher product price as they are free to partners, hence joining the Geberit network is very attractive for partners. Both sides clearly profit from the relationship.

Compared to SAP's "dual" approach, Geberit's model hands over the entire customer relationship and solution responsibility to partners. This avoids being falsely identified as the culprit in case of a failure, while achieving a broad reach in the market. Partners, on the other hand, are in a stronger position. They own their customer relationships exclusively and could decide to switch to another manufacturer's products at any time. Geberit hence theoretically needs to make any efforts to keep its partners aboard - currently, however, this is not an issue for the company.

As the cross-case findings demonstrate, there is not just one open business model that would allow a manufacturer to turn into a partner-based solution provider. Even within this very specific domain, we find major differences in the importance that firms attach to customer centricity and in the way that they set up their network of service partners. Yet, all three models have proven to be very successful for the individual firms in our sample: 3M Germany, in the long term, plans to make a significant share of its revenues through integrated solutions sold through 3M Services. SAP, with its open business model that empowers partners, has become the world market leader in enterprise application software and shows double-digit growth rates for most years of its 40-year history. Geberit, since

increasing partner focus in its European core markets, has quadrupled its profits (2000 vs. 2010 figures). What can we learn from these different open business models? What are theoretical implications for business model design?

In the following section, we employ network theory to further analyze the three possibilities and to derive propositions with regards to dependencies between customer centricity and partner network characteristics.

4. DISCUSSION: DEVELOPMENT OF A FRAMEWORK

The analysis of the relationships to partners and customers in the cases above provides new insights into the management of open business models for solution providers. Based on our findings and existing theory, we build a framework which explains that customer centricity moderates the relationship between two network dimensions - tie strength and centrality - and performance of open business models. Shared vision - the last network dimension - is directly positively related to the performance of open business models.

Solution providers with business models with low customer centricity, such as Geberit, need to be connected to many service partners with weak ties and with a high level of shared vision in order to achieve superior performance. On the other hand, solution providers pursuing business models with high customer centricity, such as 3M Services, should focus on few partners with strong ties and a high level of shared vision. Our result is very interesting as it contradicts the common wisdom that successful business models and solution providers always need to be customer-centric (e.g., Amit and Zott 2001; Windahl and Lakemond 2006). We will explain those relationships in more detail in the following:

4.1 Centrality and customer centricity

Network research defines centrality mainly as the position of an actor in the network, meaning *"the extent to which the focal actor occupies a strategic position in the network by virtue of being involved in many significant ties"* (Wasserman and Faust 1994: 172). It is

defined most broadly by the number of direct ties the focal actor has (Freeman 1979). The measure is treated as continuous variable with high centrality, meaning many ties to service partners, on the one side and low centrality, meaning a few ties to service partners, on the other side.

Several researchers have emphasized that centrality in a network is connected to power and control (Burt 1992; Brass and Burkhardt 1992; Ibarra 1993; Salk and Brannen 2000), to superior information and resource flows (Powell et al. 1999; Gulati, Nohria, and Zaheer 2000; Gnyawali and Madhavan 2001), and to a broad access to many resources, partners, or knowledge (Rowley, Behrens, and Krackhardt 2000). Some researchers have also emphasized the value of low centrality. They argue that low centrality opens up time for the focal actor, as fewer ties require less time for maintaining the relationships, as well as for supporting others in the big network (Hansen, Podolny, and Pfeffer 2001). Furthermore, they outline that being connected to fewer partners decreases the risk of being exposed to potential hindrance groups (Sparrowe et al. 2001; Lechner, Frankenberger, and Floyd 2010) or leakage points where valuable information will be conveyed to others (Gnyawali and Madhavan 2001). Being less central makes it easier for the focal group to conceal its activities from those who would oppose it. Lechner et al. (2010) have introduced the notion that the effects of low or high centrality can be moderated by the type of the initiative.

We argue that the value of high or low centrality for business model performance depends on the level of customer centricity. We begin our discussion with the Geberit case. The business model of the company is characterized by a low level of customer centricity. Due to the fact that the company has limited direct contacts to solution customers only, it needs to ensure its market reach via relations to service partners that sell their product combined with a service to the end customers. A central position in the partner network can overcome or even outplay the missing direct contact to customers. Being connected to many partners, which are by themselves again connected to many customers, enables the focal solution provider to be

indirectly connected to a large number of customers, many more than the solution provider would be able to manage on its own. Therefore, being very central in the network to service partners is crucial for the success of the open business model with low customer centricity, as it provide the focal company with access to resources and customers (Rowley, Behrens, and Krackhardt 2000).

Furthermore, being not directly connected to the customers requires the solution provider to use other sources to gain insights about customer needs and preferences. Having a central position in the partner network enables the focal firm to gain detailed and diverse information about the needs and preferences of their customers. This, in turn, is crucial for the continuous development of the products and the competitive position. Literature supports this argumentation as pervious scholars have outlined that a high degree of centrality leads to an increase in information flows and in information diversity (Powell et al. 1999; Gulati, Nohria, and Zaheer 2000; Gnyawali and Madhavan 2001).

Finally, solution providers with a low customer centricity need be powerful within the network of partners to ensure that partners use their - and not competitors' - products in the solution towards the end customer. As argued in literature, a central position within a network significantly helps achieve such a powerful position (Burt 1992; Brass and Burkhardt 1992; Ibarra 1993; Salk and Brannen 2000). Geberit shows quite nicely how powerful such a central position can be. They have over 80% centrality within the partner network in their home market, which directly translates into a leading market penetration with their products. Competitors, which have a much lower centrality within the partner network, have difficulties to penetrate the market.

If we look at an open business model with high customer centricity, such as 3M Services, we find a different picture with respect to the optimal level of centrality. As mentioned above, 3M Services only maintains direct contacts to roughly 5% of the total service partners available, hence centrality is very low. How can this be explained?

First, as 3M Services owns the customer contacts on its own, the firm is not dependent on the possibility to access customers via partners and to gain information about the customers via their partners. Hence, the benefits for high centrality in the partner network are not very relevant for solution providers with high customer centricity. On the other hand, each additional tie costs time and resources to maintain the contact. Therefore, we argue that the solution provider with high customer centricity is better off maintaining fewer ties than being very central in the partner network.

A second argument which explains the advantage of low centrality for open business models with high customer centricity is based on the fact that increased centrality increases the risk of being exposed to hindrance groups (Sparrowe et al. 2001). 3M Services works very closely together with the service providers, from joint delivery of the solution up to developing joint solutions with the partner, which includes the transfer and exchange of sensitive information. In such a setting it is important for the success of the business model that the information and knowledge exchanged stay with the partners and are not provided to competitors, etc. A smaller network to partners allows the focal solution provider to better control the partners and to fully understand their real interests behind the cooperation. Hence, partners whose intentions do not meet 3M´s expectations can be excluded upfront.

In the third case in our sample, which is SAP, customer centricity is of medium level. The company interacts with solution customers as part of product sales and maintenance but leaves final solution design and fine-tuning to partners. How does this reflect in the company's level of centrality in the partner network? While SAP maintains ties with a huge number of partners, there are other service partners in the same market who focus on delivering competitors' or even their own software products. Despite the huge market share of SAP software, centrality in the partner network is medium. The company hence stays between the two sides outlined above and tries to reap benefits from both extremes of the centrality spectrum.

As a result, we argue that customer centricity moderates the relationship between the level of centrality and the performance of the open business model. For solution providers with high customer centricity, a low level of centrality is beneficial for the performance of the open business model, while for solution providers with low customer centricity a high level of centrality in the partner network is key for success. Formally:

P1: For open business models with high customer centricity, low centrality within the partner network leads to higher performance of the open business model. For open business models with low customer centricity, high centrality within the partner network leads to higher performance of the open business model.

4.2 Tie strength and customer centricity

Granovetter (1973: 1361), who introduced the concept of tie strength, defined it as a *"combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie."* Tie strength is often conceptualized as the frequency of interaction and the closeness of the relationship between two parties. It is viewed as a continuous measure with strong ties at the one extreme and weak ties at the other extreme (Granovetter 1973; Hansen 1999; Marsden and Campbell 1984; Levin and Cross 2004).

Researchers so far have argued that strong as well as weak ties can produce a number of positive outcomes. Granovetter (1973) argues that weak ties lead to novel information by connecting groups in an organization, which would otherwise not be connected. According to his argumentation, weak ties are more likely to transfer non-redundant information as the contacts are less likely to be connected to each other. Similarly, Levin and Cross (2004) show in their empirical study that weak ties, rather than strong ties, provide access to novel and non-redundant information.

On the other side, various researchers show the positive effects of strong ties, as they facilitate the transfer of fine-grained information and tacit knowledge (Uzzi 1996; Gulati

1998; Brass, Butterfield, and Skaggs 1998; Hansen 1999; Rangan 2000), increase the level of trust (Granovetter 1973; Larson 1992; Krackhardt 1992; Podolny 1994; Burt and Knez 1995; Uzzi 1997; Gulati, Nohria, and Zaheer 2000), and lead to support (Gambetta 1988; Fukuyama 1995; McAllister 1995; Kostova 1999) between the two actors involved in the social relationship. Some efforts have been made to reconcile the differences between weak and strong ties by introducing a contingency argument that moderates the effects (Burt 1997; Hansen 1999; Rowley, Behrens, and Krackhardt 2000; Levin and Cross 2004).

Following this research stream, we introduce customer centricity as a key contingency. We argue that, depending on the level of customer centricity of the business model, weak ties or strong ties to partners are more beneficial for the performance of the business model.

We start the discussion with the open business model with low customer centricity, represented by Geberit. It is characterized by weak and infrequent interactions with their service partners in solution delivery. Why is such a setting beneficial for the performance of the open business model? As argued above, business models with a low level of customer centricity need direct relationships to numerous partners in order to overcome the lack of direct customer contact. However, maintaining a broad partner network requires time and effort (Stevenson and Greenberg 2000), which makes it difficult or even impossible to build up strong ties to each of those partners, assuming that time availability is limited and taking into account that strong ties also require a significant amount of time (Hansen, 1999).

Besides the fact that time constraints make it difficult for solution providers with high customer centricity to build up strong ties to their partners, they actually do not need strong ties for the performance of their business model. As customer relationships are managed by the service partners and as the individual solution is also designed by them, extensive coordination efforts and transfer of fine-grained information between the product manufacturer and its partners is not required. The knowledge transferred is primarily open, codified, and generic - the solution provider aims at enabling its partners to deliver solutions.

Examples include general product descriptions, instructions, or - as in the case of Geberit - planning software and special tools. Hansen (1999) underlines this argumentation as he shows in his study that weak ties are better than strong ties for the transfer of codified and independent knowledge.

Finally, solution providers with low customer centricity need to gain diverse and non-redundant information about the needs and requirements of the customers. Only then are they able to develop products that fulfill the needs of different customer groups which then leads to superior performance. Having weak ties to solution providers enables the product manufacturer to indirectly gain diverse information about the customers, as the partners are not all connected to each other and thus channel back non-redundant and diverse information (Granovetter 1973; Burt 1992; Hansen 1999). Hence, for solution providers with low customer centricity, weak and distant ties to the service partners are more beneficial in order to ensure the transfer of non-redundant information, which in turn is key for customer- and solution-oriented product development and competitive advantage.

If we look at the other side - the open business model with high customer centricity, such as the one of 3M Services - the optimal level of tie strength is different. In fact, 3M Services maintains very close and frequent contacts with their service partners. As opposed to Geberit, 3M Services provides one offer in front of the customer which includes the externally sourced service. In order to produce a convincing solution in this setting, it requires detailed coordination and the exchange of sensitive knowledge and information between the service partners and the product manufacturer. Tacit knowledge (Szulanski 1996) and fine-grained information needs to be transferred, which is only possible through strong and close ties (Uzzi 1996). Also Hansen (1999) outlines that non-codified and dependent knowledge can only be transferred through strong ties.

Furthermore, in order to offer superior solutions, which are co-developed or co-produced between the external service provider and the product manufacturer, efficient communication

between the two parties is a key precondition. When the product manufacturer has strong ties to the service partners, the process of transferring knowledge becomes more efficient, because the focal firm knows what the partners know and know how they work and how they interact (Gulati, Nohria, and Zaheer 2000).

Finally, having such strong ties leads to increased trust between the two firms (Krackhardt 1992), which is crucial for solution providers that are fully responsible for the entire solution but source a significant part of the solution externally. While financial payments can help ensure performance of external partners, trust is a much more powerful lever to ensure a high quality solution and collaboration.

The tie strength's property as a continuous measure becomes obvious when we look at the third case in our sample, the open business model employed by SAP. In this model, ties to partners are of medium strength. Both SAP and its partners share solution responsibility for the customer, yet the tasks in solution delivery are split. SAP is concerned with delivering and maintaining the product, whereas the partner delivers the service part of the solution independently. Both parties work loosely together in delivering the solution, yet ties are weaker than in the case of 3M Services as information and knowledge exchanged are more codified and product related. The medium level of tie strength reflects in a lower level of customer centricity in SAP's business model when compared to 3M Services. While the customer is still important to SAP as the source of product revenue, the interaction-intensive task of working with the customer to fine-tune and deliver the solution is handed over to partners.

In sum, we argue that customer centricity moderates the relationship between tie strength and performance of the open business model, in the sense that for business models with low customer centricity weak ties to the service partners are more beneficial for the performance of the open business model, while for business models with high customer centricity strong ties to partners are crucial for the performance of the open business model. Formally:

P2: For open business models with high customer centricity, strong ties (in contrast to weak ties) to partners lead to higher performance of open business models. For open business models with low customer centricity, weak ties to partners (in contrast to strong ties) lead to higher performance of open business models.

4.3 Shared vision and customer centricity

Shared vision or, more broadly, the cognitive dimension of networks refers to the similarity in representation, interpretation, mental models, and world views among different social actors in a network (Nahapiet and Ghoshal 1998). More specifically, it refers to the fact that the focal actor shares a common vision with other actors or with the whole network. The greater the common understanding and the shared vision of the focal unit with that of other units and the whole network, the greater is the shared vision. The concept is based on the logic that shared understandings and structured regularities of mental processes influence economic action or limit economic reasoning, as described by Zukin and DiMaggio (1990: 15-16): *"By cognitive embeddedness we refer to the ways in which the structured regularities of mental processes limit the exercise of economic reasoning. Such limitations have for the most part been revealed by research in cognitive psychology and decision theory*."

Research on cognitive dimension of networks is quite new in the network literature and primarily focused on internal firm networks (Nahapiet and Ghoshal 1998; Tsai and Ghoshal 1998; Simsek, Lubatkin, and Floyd 2003; Lechner, Frankenberger, and Floyd 2010). However, studies in cognitive psychology, behavioral decision theory, and work on industry-level macro-cognitive elements can be used, as they provide deep insights into how cognition is shaped by and shapes interactions between various actors (Berger and Luckmann 1967; Abrahamson and Fombrun 1994; Ginsberg, Larsen, and Lomi 1996).

In this article we define shared vision as the degree to which the solution provider shares common goals and aspirations with the service partners in the network. There is broad evidence in literature that shared beliefs and common visions strongly influence strategic

choices and actions taken (e.g., D'Aveni and MacMillan 1990). Further, research has stated that shared vision leads to groupthink, as the focal actors recognize the same risks and chances and perceive the same strategies and capabilities as valuable (Hambrick and Mason 1984; Walsh 1995; Gavetti and Levinthal 2000), and that it increases efficient communication and facilitates resource and information transfer between the focal actors (Tsai and Ghoshal 1998; Orton and Weick 1990).

We argue that shared vision has a positive effect on the performance of the open business model without any moderating effect of customer centricity. For all three case examples, a shared vision with partners is crucial for the performance of the firm. For Geberit, where service partners sell the solution to the customers, a shared vision and common values are key for the functioning of the business model. Only if the partners have the same understanding of the products, the environment, and specific challenges as the product manufacturer, the solutions can be sold independently and successfully (Baum and Oliver 1991; Gavetti and Levinthal 2000). Geberit manages to develop and retain a high level of shared vision among its partners through frequent events and trainings with all partner employees. While partners are trained in Geberit products, tools, and their application, shared values and beliefs can be communicated to them.

Further, sharing a vision with external service partners is likely to lead to a cognitive lock-in (Abrahamson and Fombrun 1994) of the partners. This, in turn, limits the search for new information and reduces the number of alternatives considered (Barr, Stimpert, and Huff 1992). Hence, partners who are cognitively locked-in are more likely to stick to their product manufacturer, as switching costs are quite high. This applies to Geberit's business model, but also to SAP's. The more knowledge and experience service partners build up in delivering SAP-based solutions, the more successful they are in the market as they can sell their services more convincingly. Specialization culminates in being nominated a "special expertise partner" by SAP for a specific application or industry. Being successful with SAP-based

solutions increases service partners' belief in SAP products and, at the same time, increases their switching costs to a competitor's products.

For a business model with high customer centricity, like for 3M Services, a high level of shared vision is equally important. Due to the fact that the partners in this case exchange sensitive information and tacit knowledge, a high level of shared vision is important to facilitate efficient communication and tacit knowledge transfer (Tsai and Ghoshal 1998). Also, as the two parties work so closely together, a common worldview is necessary to produce superior results.

Summing up, we argue that shared vision is crucial for the performance of the business model and that it is equally important for business models with high and low customer centricity. Formally:

P3: The higher the level of shared vision between a solution provider and its partners, the greater the performance of the open business model

Figure 1 summarizes the influences of varying degrees of centrality, tie strength, and shared vision. The influences identified in the figure represent consequences from the insights of the three case studies and existing theoretical contributions that are used to understand how different network configurations of firms which pursue an open business model - open in terms of open collaboration with external service providers in the solution delivery phase - influence business model performance. As articulated in propositions 1, 2, and 3, all network dimensions influence the performance of the open business model. While the influence of centrality and tie strength is contingent on the degree of customer centricity, shared vision has a positive impact on the performance of the open business model.

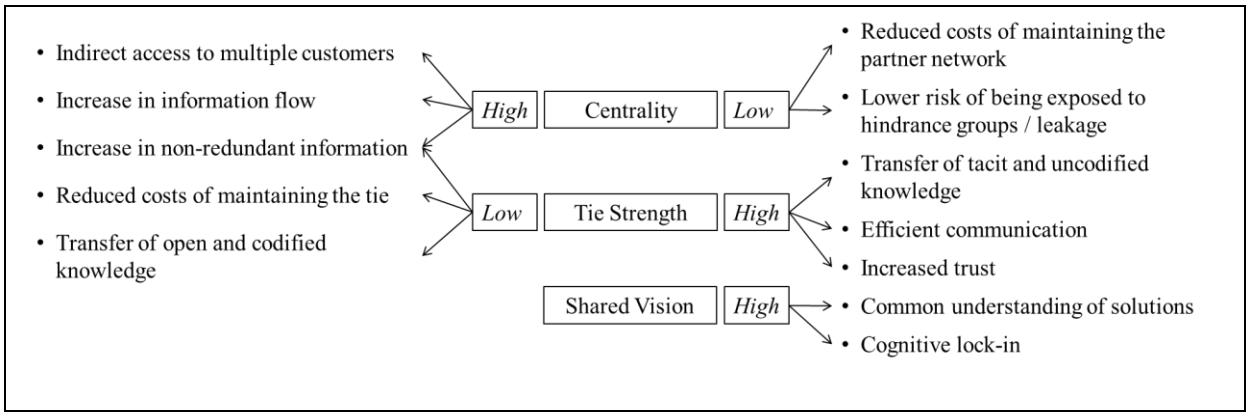


Figure 1: Influences of varying degrees of centrality, tie strength, and shared vision.

4.4 Development of three ideal network configurations for open business models

The level of customer centricity seems to be a useful way to explain how the three dimensions of networks - tie strength, centrality and shared vision - influence the performance of open business models. Based on these insights, we derive three ideal configurations of networks which lead to superior performance of open business models contingent on the level of customer centricity, namely the controlled, the joint, and the supported model. They are summarized in Figure 2.

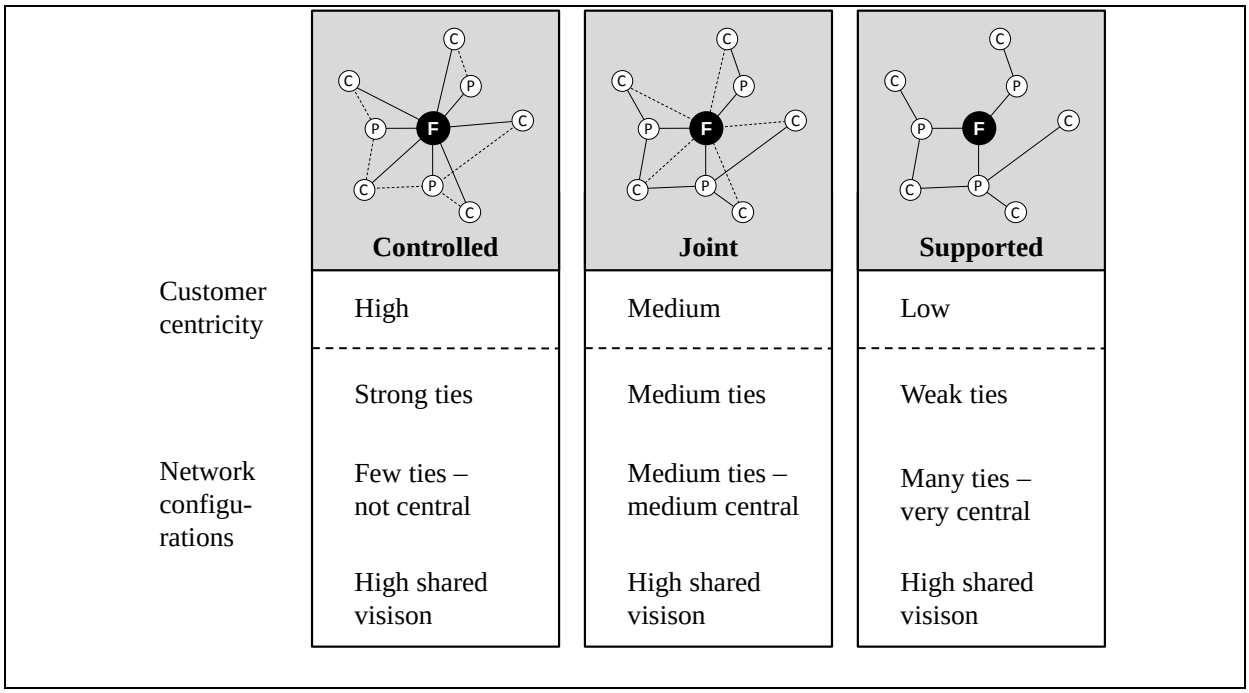


Figure 2: Three configurations of networks with partners (P) which lead to superior performance of open business models contingent on the level of customer (C) centricity.

The controlled model

We term the first configuration, in which the product manufacturer keeps control of most aspects of the solution and customer relationship, the controlled model. Due to its focus on the customer, interactions with the customer, and total solution responsibility of the solution provider, customer centricity in this business model configuration is very high. As we argue in our propositions, an open business model with this property requires a partner network configuration that is compatible to be successful. The solution provider needs to establish relationships to a few key service partners and needs to build up very strong and reliable relationships with them. That means the solution provider has to invest time and money to build up such strong ties (Hansen 1999). As argued, also the level of shared vision between the solution provider and the service providers should be very strong.

A configuration as described in the controlled model will allow the solution provider to achieve superior performance with its open business model because its level of customer centricity and its partner network configuration match. The solution provider can focus on designing and delivering solutions to meet customers' needs while, at the same time, it can rely on a small - and thus manageable - network of service partners that have the necessary skills and knowledge to deliver the service part of the solution as intended. In our case analysis, 3M Services represents this type of open business model.

The joint model

We call the second configuration, in which the product manufacturer weakens its customer relationship and opens solution business up for independent partners, the joint model. Customer centricity in this open business model is medium, as the solution provider encourages partners to independently deliver solutions to end customers and thus interact with them outside its immediate control. At the same time, the solution provider also maintains complementary relationships with each solution customer and keeps the capabilities to deliver solutions on its own. Giving up on control allows the solution provider to weaken the ties

with service partners to a medium level but reach out to a greater number of them in order to increase market reach, as is represented by a medium level of centrality. The shared vision between the solution provider and service partners should be strong also in this configuration.

With customer centricity and network configured as in the joint model, another configuration is found that allows a solution provider to achieve superior firm performance based on an open business model. Compared to the controlled model, the solution provider compensates reduced customer centricity with an increased number of partners. Ties to partners need to be balanced to allow for sufficient knowledge and information exchange but not consume too many resources to lose direct customer relationship. SAP represents this type of open business model in our case analysis.

The supported model

The third configuration, in which the product manufacturer gives up direct customer contact entirely and actively supports partners to design and deliver solutions, is termed the supported model. As is obvious from the fact that no direct solution customer relationships exist, only a very low level of customer centricity can be attributed to this model. As our propositions state, this is a viable option for a solution provider if the partner network is set up accordingly - that is, if it features a high level of centrality and weak partner ties. The level of shared vision should be high.

The configuration described in the supported model is another option for solution providers to design a successful open business model. Its main characteristic is a very strong focus on the partner network, in which the solution provider is very central to achieve a vast reach in the market. Ties with partners can be weak since no fine-grained knowledge is exchanged between the partners. The information transferred is rather generic as it is intended to support partners to design and deliver solutions on their own and independently. In our case analysis, Geberit represents this type of open business model.

5. IMPLICATIONS FOR THEORY AND PRACTICE

With our article we sought to contribute to the growing body of knowledge around the design of open business models. By focusing our analysis on solution providers that incorporate externally sourced services into solution delivery, we applied the business model concept to a concrete setting of high practical relevance (Windahl and Lakemond 2006). This allowed us to produce knowledge that is relevant for both worlds - the underlying theoretical bodies of knowledge and the managerial practice of firms on the move from a manufacturer to a solution provider.

Our main results, as formulated in our three propositions, are of equal interest to both sides. We showed that high customer centricity, which is often seen as the key ingredient of a solution provider strategy, is not the only option for firm success. Through the rise of business services and open business models that incorporate partner networks, customer centricity has changed its role. It acts as a moderator that shapes the partner network and determines interactions with partners. Following our propositions, solution providers can design their open business models in a consistent way and broaden their choice of strategic options.

Theoretical Implications

By integrating the insights from network theory to the business model literature, this paper contributes to research on open business models and business models in general. Research in this area so far has mainly focused on describing the concept itself and the components it is comprised of (e.g., Amit and Zott 2001; Chesbrough and Rosenbloom 2002; Morris et al. 2005; Johnson et al. 2008; McGrath 2010; Demil and Lecocq 2010; Osterwalder and Pigneur 2010), however contributions regarding antecedents and causal relations are still rare. Our study provides detailed insights into how three dimensions of networks - centrality, tie strength and shared vision - influence the performance of open business models. Although previous research has acknowledge the critical role of networks for business models (e.g., Morris et al. 2005; Osterwalder et al. 2005; Shafer et al. 2005; Zott et al. 2011), so far

research has not described the causal relationships which lead to superior performance. This paper advances literature on business models by arguing how networks influence the performance of open business models.

Furthermore, our results show that the effect of networks on the performance of open business models is contingent on the level of customer centricity. Rather than being a key requirement for successful open business models, as seen in previous research (Amit and Zott 2001; Johnson, Christensen, and Kagermann 2008; Teece 2010), our findings suggest that customer centricity can - but but must not be - a precondition. Business models with low customer centricity can be as successful as the ones with high customer centricity since an adequate network to external service partners can substitute or even outperform the benefits of high customer centricity. This finding adds to the discussion that the rise of business services and open business models that incorporate external service partners as part of the operations requires changes in the current understanding of how to do business (Ehret and Wirtz 2010).

Our analysis also suggests broadening the perspective of the term "open business model". Currently, research under this umbrella mainly deals with concepts of opening up R&D and intellectual property management to the outside network of a firm (Chesbrough 2006, 2007). With the rise of business services, however, business models can open up for partners in manifold ways and gestalts (cp. Ehret and Wirtz 2010). Our topic of product manufacturers who deliver solutions through a network of partners is a prominent recurrence of this underlying theme of increasing openness of business models.

The paper also contributes to network theory as it provides new insights to resolving the ongoing debate in network research between strong and weak tie effects and high and low centrality. Researchers differ in their assumptions regarding whether strong rather than weak tie relationships or high rather than low centrality are more appropriate for firm success. Our results suggest that this is no "either-or" question, but that the most beneficial configuration depends on the related level of customer centricity. By demonstrating the contingent effect of

customer centricity for the relational and the structural network dimensions, we complement and advance prior research on networks. Similar contingency arguments for networks have been outlined by Burt (1997), Rowley et al. (2000), Hansen (1999), Levin and Cross (2004), and Lechner et al. (2010).

Furthermore by combining business models with network theory, we add a useful unit of analysis to network research, which might be used in future research.

Finally, we contribute to solution provider theory by adding a different perspective to the frequently made assumption that a solution provider should be in charge for the delivery of the actual solution (Galbraith 2002; Davies et al. 2006). Viewed from the solution customer's perspective, the question who offers and delivers the solution is secondary as long as the need for a solution can be satisfied on the market. Focal firms who realize this need and actively enable their partner network to deliver solutions are, in our view, solution providers that base their solution business on an open business model.

Managerial Implications

Given the concrete setting of our analysis, our results also translate back directly into managerial implications on strategy level. Gummesson (2008) argues that it can be dangerous to embark an organization on a solely customer-focused journey. Our findings supplement is notion by showing that the "customer first" paradigm rules out alternative options to build an open business model around a network of independent service partners who engage with the solution customer in solution delivery. By enabling this network to deliver solutions, value is created both for solution customers and service partners. For the firms in our sample, the value also pays back and makes them more successful than they would be without their network.

It is important for managers to understand that there is not just one way of setting up an open business model that incorporates service partners for solution delivery. Without claiming completeness, we identify three possible network configurations with external service

partners that span the bandwidth between a very customer-centric controlled model and a very partner-centric supported model, in which the focal firm hands over solution sales, design, and implementation activities to its partners. Managers can take these models as a reference for their own implementations or draw inspirations from the archetypes when designing their unique flavor of an open business model.

Our propositions provide additional guidance to managers who are innovating their business model to be more open and network aware. In the awareness that customer centricity acts as a key contingency for partner network design, managers can determine the required levels of centrality in the partner network and tie strength with partners. By assessing their current business model with regards to the suggested measures, our propositions show potential areas for improvement.

Finally our results create awareness of the fact that more network ties are not always beneficial. For business models with high customer centricity it is better to focus on less contacts but stronger relationships with external service partners, while for business models with high customer centricity many weak contacts to partners lead to superior performance. So far, the conventional wisdom among managers is solely on the positive side, following the "the more the better" approach. Managers can actively shape their network to partners based on this knowledge.

Limitations and Future Research

It is a noteworthy limitation that the three propositions which condense the results of our study have been derived from a comparative study of three cases. This qualitative approach allowed us to deeply analyze and compare the data in an explorative way and provide meaningful results for practical problems. Yet, our subject of study and the concepts of network theory would also allow for a quantitative approach to the research question. In the sense of triangulation, this would be a desirable completion of our findings and hence marks a promising route for future research. A quantitative study could not only verify the

propositions made but also shed light into the finiteness of business model options in the solution provider space.

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