

Customer-related Opportunity Discovery: An Entrepreneurial Perspective of Early-Stage Innovation Processes

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Abstract

Innovation research claims that relationships with current customers influence early-stage innovation processes, shaping the discovery of opportunities with a potential to be new and disruptive to the market; in the perspective of entrepreneurship research, this focus can be reframed as customer-related opportunity discovery. Thereby, it is discussed controversially whether and how relationships with current customers enable or constrain the discovery of disruptive opportunities in early-stage innovation processes. It is argued that detailed knowledge, close relationships, and intense interactions with current customers lead to disruptive opportunities and successful innovation, due to a better understanding of customer needs or issues with current technologies; at the same time, close customer relationships can lead to a lock-in into a too narrow understanding of relevant needs, issues and opportunities. In this paper, we conceptually explore this important paradox in innovation and entrepreneurship research, by identifying a series of dimensions of customer relationships, their impact on the degree of disruptiveness of discovered opportunities, as well as the moderating effect of technological change and market turbulence on this impact. The exploration of this customer relationship paradox in innovation and entrepreneurship lies at the heart of the new strategic entrepreneurship research program, through the attempt of closely relating innovation processes, opportunity discovery, and strategic partnering between companies and their customers.

Introduction

Relationships with customers are highly relevant for early-stage innovation processes and opportunity discovery. Innovation and entrepreneurship research report, that a company's experience with the usage of its services and products can lead to important insights and new ideas concerning potential future products and services, thus indicating potential customer-related opportunities, relevant for ear-

ly-stage innovation processes. While this basic interdependence between customer relationships and early-stage innovation is thereby undoubted, it is controversial whether, how and in which circumstances a close relationship with current customers is beneficial for the discovery of new opportunities in general and of disruptive opportunities in particular.

A close relationship with current customers, also called tight coupling (Danneels, 2003) is seen as beneficial for opportunity discovery, because it allows firms to gain deeper, more specific and continuously evolving insights into current and potential customer needs. As a consequence, companies establish particularly intense relationships with current customers, which are most promising for identifying future opportunities, because they move “at the edge“ of an industry or because they face particularly exemplary challenges (von Hippel, 1986). In the perspective of Orlikowski (1992), it is important not only to understand what customers say about the products and technologies they use, but to observe how they actually use them in their everyday practice.

A close relationship with current customers can however also become problematic: it has been shown that market leaders miss disruptive technologies and markets, because they focus too much on their most important, current customers (Christensen & Bower, 1996), thereby neglecting that new customer needs and related markets might emerge, which are beyond existing customers. Hamel and Prahalad (1994) explore this phenomenon as the tyranny of the served market, constraining the necessary flexibility towards new potential markets (Danneels, 2003). This also explains the more recent interest in user entrepreneurship, which implies that particular users themselves start to initiate new businesses, because they are not served by existing companies in a market (Shah & Tripsas, 2007).

In our conceptual paper, we will further explore this controversial issue concerning *customer relationships and their impact on early-stage innovation processes*. In particular, we are interested in understanding under which conditions and how customer relationships lead to the discovery of disruptive new ideas with the potential to turn into disruptive innovations: in the perspective of entrepreneurship research, we identify them as “*disruptive opportunities*”, which are understood as opportunities with the potential to lead to disruptive innovations. Khurana and Rosenthal (1998) call this stage pre-phase zero, indicating that in order to initiate new product development, opportunity discovery and idea generation are required; furthermore, we learn from innovation research, that this initial phase has major implications for the later product development process, as well as for the potentially radical or disruptive quality of the outcome, due to path dependence (Garud & Karnoe, 2001). We thus focus our analysis of the above mentioned paradox on the initial stage of the innovation process, the opportunity discovery process, as an underexplored research area, which however is particularly important for any opportunity realization and innovation process, asking the following research question: *How do relationships with current customers influence the degree of disruptiveness of discovered opportunities?*

In this paper, we first discuss the existing literature on the positive, negative and mixed impact of customer relationships on early-stage innovation and opportunity discovery, exploring the often implicit boundary conditions, which allow to understanding why customer relationships can have such diverse implications on the innovation process. Second, we suggest a formal model, systematically incorporating these different insights into one coherent conceptual framework, differentiating several dimensions and qualities of customer relationships as the independent variables, introducing technological change and market turbulence as two important moderating variables, as well as suggesting the degree of disruptiveness as an interesting new characterization of opportunities, as they are discovered and proposed in entrepreneurial and innovation processes. This model allows us to identify a series of

interesting propositions concerning the impact of customer relationships on opportunity discovery in early-innovation processes.

Customer relationships, early-stage innovation and opportunity discovery

Positive effects of customer relationships on opportunity discovery

Looking at the state of the art in the existing literature, we find several studies identifying customers as an important source for the discovery of new opportunities. Danneels (2003) for example argue that a fine-grained understanding of customer needs helps to customize offers to their current customers in order to serve them well. In a similar vein, Atuahene-Gima, Slater and Olson (2005) highlight that a focus on expressed needs of current customers reduces the likelihood of errors in problem-solving activities and the risk of expanding into the unknown (Atuahene-Gima, et al., 2005).

With respect to the impact of customer relationships on the innovation process, Zander and Zander (2005) find in their case study that a close relationship to current customers leads to in-depth insights into particular needs of their customers through knowledge exchange which is beneficial for problem solving and thus, innovation consequences. Furthermore, Gatignon and Xuereb (1997) find that companies focusing on customers foster product innovation when demand is uncertain. Han, Kim and Srivastava (1998) identify a positive relationship of customer focused companies and technical as well as administrative innovation in US banks. Finally, Gruner and Homburg (2000) show that an intense customer interaction in the early stage of innovation process enhances new product success.

With regard to the degree of innovation, Lukas and Ferrell (2000) point out for their sample of 194 manufacturing companies that customer focused firms increased the introduction of new-to-the-world products and reduced the introduction of mee-too-products. Koen and Kohli (1998) find for 34 new product development projects that the interaction between customers and engineers is the most important source of ideas for radical innovation. In a service setting, Magnusson, Matthing and Kristensson (2003) show that the quality of generated ideas for new service development improved with user involvement as engineers and professionals may misinterpret users' needs. In addition, Lagrosen (2005) finds in his case study that customers are involved especially in the initial stage of innovation processes. Such customer involvement includes among others complaints or suggestions for improvements by customers, visits as well as customer invitations for discussions about potential improvements and innovations.

Finally, we find studies, which specifically emphasize the importance of differentiating between types of interaction with customers in the context of innovation processes (e.g. Alam, 2002). In particular, not only the evaluation of existing and new products or services by customers, but their actual usage is seen as an important source for discovering new opportunities. In a multi-national software firm, Orlikowski (1992) finds that users of technology may not use it as intended by developers. They even transform the originally intended purpose of technology. Out of users' reaction, the technology is modified as desired.

Negative effects of customer relationships on opportunity discovery

These various studies emphasizing the importance and positive impact of customer relationships on opportunity discovery and early-stage innovation, are complemented by a series of studies showing negative effects of a close relationship to current customers for opportunity discovery. By being close to current customers, firms might ignore potential customers and therefore miss possible opportunities (Danneels, 2003). Customers, which base their evaluation on product experiences in the past, are often not capable of imagining something different (Ulwick, 2002). Hence, existing customers often solely emphasize improvements of existing products and services, in particular in the interaction with companies providing those products and services. This threat of incrementalism is also confirmed among others by studies of Tauber (1974) and Bennett and Cooper (1979, 1981), exploring customers' limited ability to express their needs verbally.

With respect to the negative impact of customer relationships on innovation, Danneels (2003) highlights, that close relationships with customers constrain the flexibility of a company in reacting to alternative opportunities, which lie outside the focus of a particular customer relationship. In a context of high technological change, Bower and Christensen (1996) find that incumbent market leaders in the US disk drive industry actually lost their market share, because they listened too carefully to their current customers. As current customers did not want the new, disruptive technologies, with potential implications on the overall business, the market leaders together with their most advanced customers missed the development of these disruptive technologies and thus, the penetration of emerging markets.

This leads to an interesting discussion of the implications of these negative effects for established companies and entrepreneurial ventures in terms of discovering new opportunities, as well as successfully transforming them into new products and services. In a context of disruptive technologies, Christensen and Bower (1996) as well as Danneels (2003) suggest to spin out organizations for the exploration and realization of disruptive opportunities, in order to be independent from the current customer base, as well as the established corporate culture and innovation processes serving these customers. The internal barriers or current customers' resistance to progress might also be mitigated by outsourcing the idea-generation process. Ulwick (2002) argues that opportunity discovery can benefit from asking diverse people which are related to the desired business context, rather than existing customers. There are specialized firms (e.g. IDEO) which undertake opportunity discovery and early-stage innovation for a variety of customers from different industries. Due to their experience out of multiple other industries, they can either transfer technologies (technology brokering) from other industries or approach the idea-generation process in a more open, but at the same time also more disciplined and conscious way (Hargadon & Sutton, 1997). Hence, they introduce established technologies from other industries into this context.

Finally, we find studies arguing that it is important to build weak ties to customers in a dynamic environment (Danneels, 2003) requiring among others scanning activities such as seeking information from non-current customers or data on market trends. This scanning activities can also involve the monitoring of other firms in order to learn from their experience in other markets (Dickson, 1992). In a similar vein, Lilien, Morrison, Searls, Sonnack and von Hippel (2002) point out the role of users outside a firm's established market. These users offer potential for a market as they possibly face needs that are ahead of all members of the established market. Thus while there are negative effects of

customer relations to opportunity discovery, it seems that companies develop a multiplicity of specific practices and interaction patterns with existing and new customers, in their existing and in new markets, as well as specific organizational settings, which allow to separate the exploration and realization of existing and disruptive opportunities, both within a company, through partnerships with external companies, as well as by engaging specialized innovation brokerage companies for discovering and conceptualizing new opportunities.

Mixed effects of customer relationships on opportunity discovery

It is thus not surprising, that we also find a series of studies arguing for mixed effects of customer relationships on the discovery of disruptive opportunities. Kaufmann and Tödting (Kaufmann & Tödting, 2001) find in their sample of 517 mostly manufacturers in regions of Wales, Belgium, Germany, Austria, Spain, Portugal and Finland, that customers and suppliers are most relevant for incremental (new-to-the-firm) as well as disruptive (new-to-the-market) innovations. However, the effect of current customers as sources for successful disruptive innovations reduces from 38 to 33 %. As a consequence, but independent from the mentioned study, there are studies which distinguish the characteristics of customers for innovation consequences in general and opportunity discovery in particular. Therefore, they argue that close relationships with customers have to be selectively chosen. Von Hippel (1986) states that it is important for companies to rely on special customers – so called lead users – for identifying emerging trends long before the bulk of the market. At the same time, these lead users have a high incentive to innovate in order to satisfy their own needs through their impact on the innovation process of their suppliers (e.g. Baldwin & von Hippel, 2009). They are found to influence the idea-generation process for innovation in different companies such as 3M, Hilti or Johnson and Johnson (Lilien, et al., 2002; Lüthje & Herstatt, 2004). Given these mixed results, von Hippel (2009) argues that successful firms are undertaking two actions at the same time: first, they seek for opportunities developed by lead users themselves, and thus independent of the interaction with the company; second, they proactively interact with certain lead users in order to jointly discover and develop disruptive opportunities.

More specifically, the role of user innovation and the innovation as well as opportunity discovery activities of customers and users themselves, has been emphasized. Recent research for example shows that specific users are often first in developing new opportunities for industrial and consumer products (von Hippel, 2009). In rodeo kayaking for example, Baldwin et al. (2006) find that 62% of major and 83% of minor equipment innovations were developed by users. Users constantly experience needs, which are not satisfied by existing products and services. As a consequence, they start to build new products for their personal use, and sometimes found their own companies or develop a product for in-house use in case of industrial products (Franke, von Hippel, & Schreier, 2005). This phenomenon is also discussed as user entrepreneurship (Shah & Tripsas, 2007). 84 per cent out of their sample of 263 firms in the juvenile product industry were founded by users who popped upon an unmet need and wished to satisfy it. Shah and Tripsas (2007) state that this phenomenon is more likely to be applicable when the opportunity costs of users are relatively low, when the industry is characterized by small scale, peripheral niche markets with high variety in demand. This is confirmed by the study of Lettl, Hienerth and Gemuenden (2008) showing that although surgeons developed radical innovations in medical equipment industry they did not found companies in order to sell these products because of

high opportunity cost. However, a high level of technological complexity, long time to market as well as high established industry standards are further reasons not to found an own company and approaching existing companies. Thereby, it is interesting to recognize that user innovation is often licensed to established companies for commercialization.

This implies that the mixed effects of customer relationships on opportunity discovery is also a matter of whether we focus on the entire innovation process, or more specifically on opportunity discovery and early-stage innovation. Lettl, Hienerth and Gemuenden (2008) show that established firms do not want to adapt to new and disruptive ideas from lead users at an early stage, for several reasons: first, the opportunities depart from the established strategy and their core competencies; second, there are often high market and technological uncertainties regarding disruptive opportunities; third, the “not invented here” syndrome is often mentioned, as employees do not easily accept new opportunities developed by people external to the firm.

Customer-related opportunity discovery: The Model

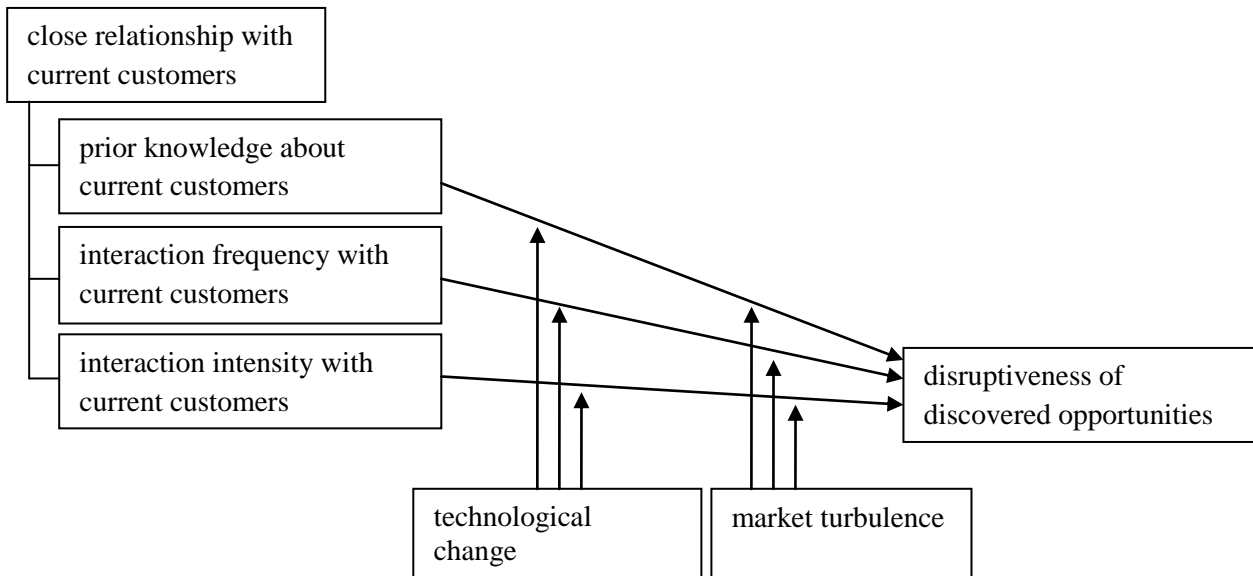
Based on the multiple positive, negative and mixed findings concerning the impact of customer relationships on opportunity discovery and early-stage innovation, we suggest a simple formal model, which allows to systematically integrating those multiple, partially contradicting findings into one framework. Thereby, we suggest “opportunity discovery” as the dependent variable, focusing on the degree of “disruptiveness” as particularly promising scale to differentiate different effects of customer relationships on opportunity discovery. Thereby, we benefit from innovation research, which often analyzes the degree of innovativeness as dependent variable. Incremental, new-to-the-firm, new-to-the-world, imitated, radical, disruptive, modular, architectural, breakthrough or generational are mentioned in the literature as possible qualifications of the degree of “innovativeness” of a new product or service (e.g. Abernathy & Clark, 1985; Bogers, Afuah, & Bastian, 2010; Henderson & Clark, 1990). Thereby, most studies are particularly interested in exploring the degree of innovativeness with respect to its novelty to an existing market.

For our model, we set the degree of disruptiveness of a discovered opportunity as our dependent variable. In the perspective of the recent confluence of innovation research and entrepreneurship research, in particular in the context of the strategic entrepreneurship research program (Schendel & Hitt, 2007), as well as in the discussion of technology entrepreneurship, which is inherently related to issues of technological innovation (Garud & Karnoe, 2003), we see the concept of “disruptive opportunity” as a particularly promising new concept. On the one hand, it allows to specifically focusing on early-stage innovation. As we know from innovation research, the early innovation phase is particularly influential to the later innovation process, due to the importance of “initial conditions” (Helfat, 2000) and the impact of path dependence on innovation (Garud & Karnoe, 2001).

As we are interested in the effect of relationships with current customers on the degree of disruptiveness of a discovered opportunity, we further specify and conceptualize “customer relationship” with respect to a series of dimensions and qualities, based on the literature review discussed above. We suggest three dimensions of customer relationships as particularly promising independent variables, in order to further specify different ways for companies to relate to their customers: first, prior knowledge about current customers; second, interaction frequency with current customers; third, interaction intensity with current customers.

Finally, based on our literature review, we identify technological change (e.g. Christensen and Bower, 1996) and market turbulence (e.g. Baldwin et al. 2006) as two important moderating variables, which we also incorporate into our model: In sum, we suggest the following basic model for the impact of customer relationships on opportunity discovery (Figure 1):

Figure 1: Customer-related opportunity discovery



In a next section, we further explore the different resulting relations between the three dimensions of customer relationships, the degree of disruptiveness of new opportunities, and the impact of the two moderating variables.

Customer relations and opportunity discovery: Propositions

Prior knowledge about current customers

Prior knowledge is assumed to influence opportunity discovery: Opportunities are described as arising out of technological changes, altered consumer preferences, regulatory and social changes (Alvarez & Barney, 2007; Kirzner, 1973: 10; Shane, 2003: 23) which are discovered by individuals because of their prior knowledge. Particular entrepreneurial individuals, teams, and organizations tend to consider new information, because it is familiar to existing information they already possess (Von Hippel, 1994). It is their idiosyncratic prior knowledge which creates a “knowledge corridor” (Rons-tadt, 1988; Venkataraman, 1997).

There are different forms of prior knowledge. Shane (2000) lists among others prior knowledge about customer problems as one important source for discovering new opportunities. This knowledge originates mostly from experience with customer problems and from past customer interaction. A high degree of prior knowledge means that a firm has a lot of knowledge about current customers and their past problems.

More recent research also identifies a limiting effect of prior knowledge about customer problems for opportunity discovery. Haynie and McKelvie (2010) state that individuals having a deficit in prior

knowledge may be motivated to “see beyond” their current perspectives, detecting particularly promising new opportunities. In a similar vein, it is argued that being oriented to the past and especially to current customers can restrict the novelty of opportunities, leading to incremental rather than disruptive opportunities (e.g. Christensen & Bower, 1996; Hamel & Prahalad, 1994; Tauber, 1974). Hence, we propose that prior knowledge about current customers constrains the degree of disruptiveness of discovered opportunities.

Proposition 1: Prior knowledge about current customers has a negative impact on the degree of disruptiveness of discovered opportunities.

Interaction frequency with current customers

Interaction frequency with customers is well documented in buyer-seller interactions for product development projects (e.g. Hoegl & Wagner, 2005). It is viewed as the quantitative aspect of communication between a firm and its customers. It is widely acknowledged that frequent social interactions provide opportunities to learn. Zander and Zander (2005) for example show that a frequent and intense contact with its current customers leads to attaining more knowledge about their needs, and as a consequence discovering opportunities for new products and services.

However, such frequent contact can constrain the disruptiveness of discovered opportunities (e.g. Christensen and Bower, 1996). Current customers might only give ideas according to experienced shortcomings and problems in the past leading to the discovery of incremental opportunities (e.g. Ulwick, 2002). Therefore, frequent interactions with current customers leads to a lower degree of disruptiveness of opportunities.

Proposition 2: Interaction frequency with current customers has a negative impact on the degree of disruptiveness of discovered opportunities.

Interaction intensity with current customers

Beside the quantitative aspect of interaction, there is a wide recognition of qualitative aspects in the literature (e.g. Gruner & Homburg, 2000; Zander & Zander, 2005). These qualitative aspects are also called interaction intensity. Alam (2002) for example builds a continuum of interaction intensity. It reaches from passive acquisition of input, to customer feedback on specific issues and finally, to extensive consultation with users.

We suggest that the disruptiveness of discovered opportunities depends on the degree of interaction intensity. Ulwick (2002) argues that current customers cannot discover technological opportunities due to their lack of technical knowledge and expertise. Furthermore, customers’ thoughts mostly depend on past experiences lowering the heterogeneity of opportunities. Therefore, feedback on specific issues gained from formal market research rather constrain the degree of disruptiveness of opportunities because of this orientation on past experience. However, on a low degree of interaction intensity, opportunities are more heterogeneous and basing on more diverse sources such as observing customers, environment scanning or technology brokering (Hargadon & Sutton, 1997; Leonard & Rayport, 1997). On a high level of interaction intensity, such as in-depth interviews or workshops, customer inputs can be beneficial for the disruptiveness of discovered opportunities. Studies about lead users show that they are characterized by two characteristics: First, they see future trends long before others do.

Second, they have a strong incentive to satisfy their emerging needs (e.g. von Hippel, 1986). As in-depth interviews and workshops are time consuming, we suggest that only current customers with a strong incentive and motivation to innovate participate. It is likely that lead user participate more often than other customers because of their strong incentive. As diverse studies have shown that lead user discover radical and disruptive opportunities (e.g. Lettl et al. 2008), high interaction intensity leads to a higher degree of disruptiveness of discovered opportunities.

Hence, we propose that the relation between an intense interaction with current customers and the degree of disruptiveness of discovered opportunities is U-shaped.

Proposition 3: The relation between interaction intensity with current customers and the degree of disruptiveness of discovered opportunities is U-shaped.

The moderating effect of technological change

Christensen and Bower (1996) find that in a context of high technological change listening too carefully to their current customers is unfavourable. Therefore, we argue that the degree of technological change moderates the link between the three factors of close relationships with current customers and the degree of disruptiveness of discovered opportunities.

Prior knowledge about current customers: Opportunities arise out of technological change (Kirzner, 1973: 10; Shane, 2003: 23). When the degree of technological change is higher, more opportunities emerge waiting to be discovered. As prior knowledge focuses on past experiences and (old) technologies rather than on experiences with emerging technologies, the use and benefits of these new technologies cannot be assessed easily through prior knowledge. Opportunities arising through these newly developed technologies are not interpreted as such because the use of them is unimaginable due to this past oriented thinking. Hence, we propose that the degree of technological change intensifies the link between prior knowledge about current customers and the degree of disruptiveness of an opportunity.

Proposition 1b: Technological change enhances the negative impact of prior knowledge about current customers and the degree of disruptiveness of discovered opportunities.

Interaction frequency with current customers: As we have already shown that current customers mostly rely on past experience about the use of existing products and services, the discovery of disruptive opportunities out of new technologies is rather constrained. In a context of high technological change, we suggest that this effect is even intensified. In such a context, there are a higher amount of disruptive opportunities out of technological change. However, as current customers are mostly oriented on past experiences, these opportunities are not discovered, tendentially leading to the discovery of incremental opportunities: Existing products and services are improved, and thus the status quo is maintained.

Proposition 2b: Technological change enhances the negative impact of interaction frequency with current customers and the degree of disruptiveness of discovered opportunities.

Interaction intensity with current customers: Orlikowski (1992) states that opportunities from new technologies mostly arise out of the users' use of it. The user's purpose can differ strongly from the originally developed purpose of engineers. By offering the possibility to use this new technology intensively, the probability of discovering a disruptive opportunity rises. Hence, we suggest that the effect on the degree of disruptiveness of discovered opportunities depends on the degree of interaction

intensity with current customers. A high interaction intensity leads to the discovery of disruptive opportunities due to the observation of the use of new technologies. However, when customers are not able to try new technologies – as in the case of low and medium interaction intensity – these disruptive opportunities are not discovered. Market research for example asking if a new technology serves customers' needs, would not lead to the discovery of disruptive opportunities due to an orientation of past experiences and a lack of foresight of most current customers.

Proposition 3b1: Technological change lowers the effect of a low interaction intensity with current customers and the degree of disruptiveness of discovered opportunities.

Proposition 3b2: Technological change lowers the effect of a medium interaction intensity with current customers and the degree of disruptiveness of discovered opportunities.

Proposition 3b3: Technological change enhances the effect of a high interaction intensity with current customers and the degree of disruptiveness of discovered opportunities.

The moderating effect of market turbulence

User innovation often occurs in industries characterized by high market dynamics such as high tech or extreme sports (e.g. Lettl, et al., 2008; Lilien, et al., 2002). Customer needs are heterogeneous and change frequently. Therefore, we propose market turbulence to be a moderator for the link between the three factors explaining the link between a close relationship closeness to current customers and the degree of disruptiveness of discovered opportunities.

Prior knowledge about current customers: In industries with heterogeneous and rapidly changing customer needs it is shown that users popped upon opportunities more than established companies did (e.g. Shah & Tripsas, 2007). It can be argued that established companies have not discovered these opportunities because of their reliance on prior knowledge. Due to firms' orientation on past experiences they miss future trends and changing customer needs. Such opportunities arising out of changing customer needs are not discovered because of a knowledge corridor referring to past experiences.

Hence, we propose that market turbulence further strengthens the link between a high degree of prior knowledge about current customers and a low degree of disruptiveness of discovered opportunities.

Proposition 1c: Market turbulence enhances the negative impact of prior knowledge about current customers and the degree of disruptiveness of an opportunity.

Interaction frequency with current customers: In contexts of high variety in demand and small scale where users have low opportunity cost and a strong need to innovate, users are probably the first to pop upon an opportunity (e.g. Lettl, et al., 2008; Shah & Tripsas, 2007). In a market characterized as being turbulent and described by rapidly changing customer needs, we suggest that a frequent interaction with customers leads to a higher probability that customers share their knowledge about changing needs. A firm's awareness about changing customer needs leads to the discovery of more opportunities than without this knowledge. Furthermore, lead user might communicate these changing needs more than others due to their strong incentive to satisfy these needs and the emerging of these needs long before others do. When they interact frequently with an established firm, we suggest that in a context of high market turbulence the probability that disruptive opportunities emerge out of the communication of changing customer needs is higher.

Hence, we propose that market turbulence moderates the link between a high frequency of interaction with current customers and a low degree of disruptiveness of discovered opportunities.

Proposition 2c: Market turbulence weakens the negative impact of interaction frequency with current customers and the degree of disruptiveness of discovered opportunities.

Interaction intensity with current customers: In a market which is characterized by rapidly changing customer needs, intense interactions with current customers can be a useful mode to discover such changing needs and arising opportunities to satisfy them before other companies do. Different studies have shown that lead users are a source for such opportunities (e.g. von Hippel, 1986). We argue that by interacting intensively with current customers in general and lead users in particular, the probability to discover disruptive opportunities increases in a context of market turbulence. Therefore, in a context of high market turbulence the effect of intense interaction with current customers to the disruptiveness of discovered opportunities is increased.

Proposition 3c: Market turbulence enhances the U-shaped impact of intense interaction with current customers and the degree of disruptiveness of discovered opportunities.

Conclusions and implications

The outlined model of customer-related innovation intended to fulfill four different purposes. First, the identified paradox of closeness to current customers and its innovation consequences is outlined and further deepened. It is based on a large body of research in this domain (e.g. Christensen & Bower, 1996; Shah & Tripsas, 2007; Urban & Von Hippel, 1988). Second, the paradox is analyzed in early stages of the innovation process in order to gain insights from innovation and entrepreneurship research. Third, a close relationship with current customers is conceptualized by three dimensions and integrated in a model to explain the degree of disruptiveness of discovered opportunities. Furthermore, technological change and market turbulence are identified moderator variables. Fourth, it refers to current debate about the intersection of innovation and entrepreneurship. User innovation and user entrepreneurship recently gained more attention in scholarly work (e.g. Lettl, et al., 2008; Shah & Tripsas, 2007).

In sum, we analyzed how customer relationships influence the degree of disruptiveness of discovered opportunities. We proposed that a close relationship with current customers can be conceptualized by three factors: prior knowledge about current customers, interaction frequency and interaction intensity. Furthermore we have proposed technological change and market turbulence to be moderators for the impact of the three different factors of a close relationship with current customers on the disruptiveness of discovered opportunities.

We suggest to further shed light into the complexity of opportunity discovery and the mentioned paradox by empirically analyzing our proposed model. In addition, as we focused on the relationship with current customers we have not analyzed different characteristics of customers and their impact on opportunity discovery. Therefore, we recommend to further contribute to user innovation and lead user research by integrating the characteristics of customers.

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