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***Open Innovation and Customer Integration: Opportunities and Risks***

**1. Introduction**

Open innovation has established itself amongst both scholars and practitioners as a clear concept of innovations management. The publications on the tactical opening of innovation processes and on the strategic integration of the external environment are numerous. For the most part, the advantages of open innovation are considered, and less commonly the risks. This article acts upon this deficit by critically appraising the integration of customers, in particular lead users. With the transformation from a sellers' to a buyers' market, it has become crucial for companies to anticipate the needs of their customers at an early stage and to integrate them into their innovation process. Amongst diverse methods, the lead user approach is considered to be one of the most active forms of integrating external knowledge into the company. In this paper, the opportunities, risks and success factors of customer integration and the lead user methods will be described in particular.

## 2. Increasing pressure towards the opening of the innovation process

Up until the beginning of this century, one could speak of a mainly self-contained generation of innovations. The company's internal innovation process resulted from the attempt to not leak any information to the outside. Thus, competitors had little chance of imitating ideas (Chesbrough 2003). This closed innovation model was met with a lot of approval due to political, economic and technological advantages. However, in recent times more and more companies are confronted with more fundamental problems of closed innovation processes. This includes an increasing intensity in competition and higher innovation pressure (Gerybadze, Reger 1999). This causes the growing necessity of optimising the innovation process for the companies (Chesbrough 2006). The open innovation paradigm – as an answer to the above-mentioned trends – has the goal of opening up the companies' boundaries for new methods of innovation (Figure 1). The volitional internalisation and externalisation of ideas allows for the implementation of the best possible innovation projects (Chesbrough 2003). The company changes its closed boundaries so that they are semipermeable, making an exchange possible (Chesbrough 2003, Herzog 2008). When comparing the closed paradigm to a "predictable chess game", the open approach can be seen as a "volatile poker game" (Chesbrough 2004).

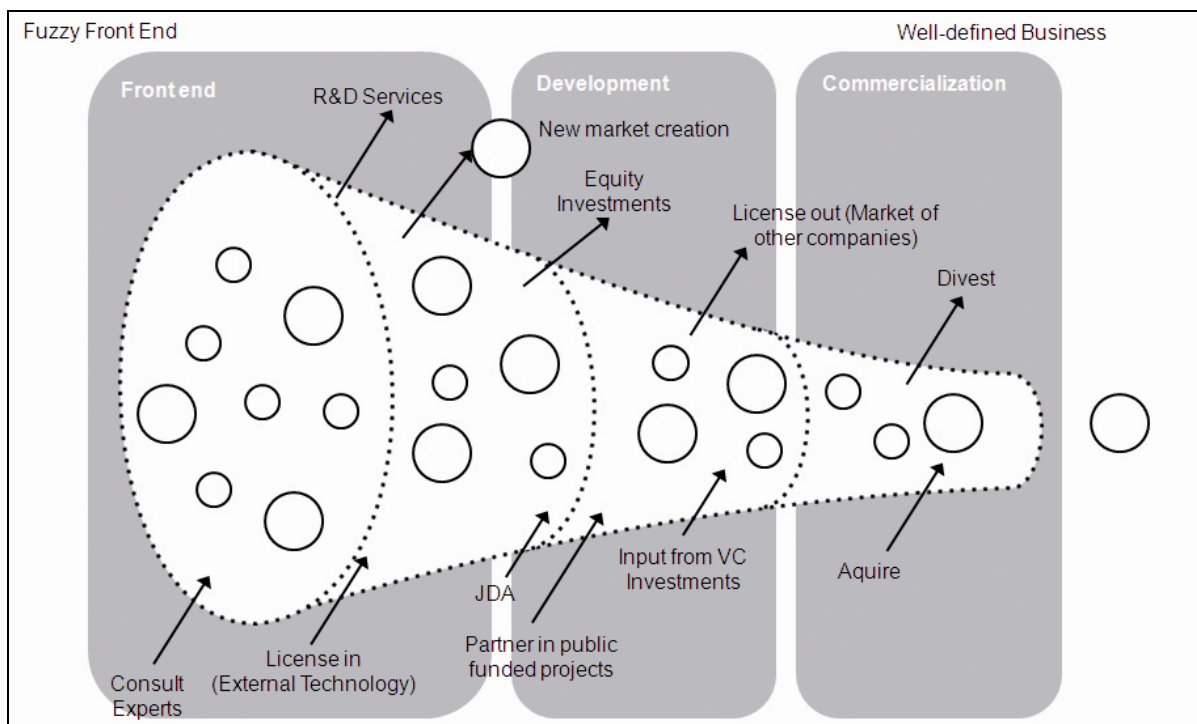


Fig. 1: Open innovation: with combined know-how and expertise to new innovations  
 [Sources: Chesbrough 2003,  
<http://www.basf-futurebusiness.com/de/innovation-scouting/open-innovation.html>]

At this point it would be appropriate to mention that the open innovation paradigm according to Chesbrough borrows, to a certain extent, from the well-known approaches. That companies' boundaries should be open to the outside to enable the information flow between the company and the external partner is the result of various studies (for example: Kogut, Zander

1992, Tushman 1977). This is in agreement to research findings showing that the necessity of having access to external knowledge resources is increasing (Chiesa, Manzini 1998, Edler et al. 2001). After all, external sources are responsible for one to two thirds of the input needed for the development of innovations (Conway 1995). Through the integration of these external partners into the innovation process, trends and changing needs structures can be identified and taken into account. Patents, publications, competitors, suppliers and the customers discussed in this article represent the most important sources for this (Urban, von Hippel 1988, Verworn, Herstatt 2007).

### **3. The role of the customer in generating innovations**

The basic principle of customer integration is based on solving the customers' problem together with them. Through this, the role of the customer changes increasingly from that of a passive consumer to an active co-innovator, co-producer and co-designer of the innovation process (Piller 2003). From the viewpoint of the innovating company, the relevance of cooperating with customers is quite high. The following can be taken from the study by Tyrrell:

*“Of those surveyed, 75% say that they agree with the view that customers are becoming an increasingly important source of innovation. Similarly, 54% involve customers in the innovation process and 50% regard customers as an important type of external partner in the innovation process.” (Tyrrell 2007, 5)*

Other empirical research also emphasises the significance of the customer in the innovation process (Laursen, Salter 2006). Customer integration guarantees an intensive form of customer orientation (Kuester et al. 2007). The customer will namely not just be asked about their needs through marketing and sales, but it allows their experience and expertise to flow directly into the development process (Beutnagel 2008). Conversion mistakes are thus minimised (Sandmeier 2008). Through keeping customer-induced ideas and creations in mind with which the customer communicates implicit knowledge to the company, a learning process begins (Chesbrough 2003). The challenge mainly consists of achieving access to this implicit customer knowledge. Implicit knowledge is important for a company in that it not only decreases market insecurity, but also prevents competitors from imitation (Simard, West 2006). Customer integration in terms of the innovation process does however harbour risks. Bower and Christensen (1995) point out that average customers bring in their current and not their future needs, thus making radical innovations more difficult. Thus Hamel and Prahalad (1994, 99) conclude: “[...] customers are notoriously lacking in foresight”. Even if the role of customer cooperation in terms of the degree of innovation is discussed in a contradictory manner in economic-scientific literature, this does not change the fundamental importance of the customer in the innovation process. Gassmann (2006) illustrates that user innovation and integration is one of five schools of thought that will continue to shape open innovation research. Within the innovation process, customers can take on various roles (Lettl, Gemünden 2005).

In order for the customers to fulfil their role in the innovation process, certain rudiments on the side of the innovating company as well as on the side of the customer need to exist (Wecht 2005). In his literature review, Wecht lists various success factors that determine the integration process, amongst others:

- The development of clear goals that will guide the direction of the partnership
- Suitable structures according to the demands of the respective development tasks
- Form of integration in correlation to contribution, the resources and the stage of the innovation process
- Relationship variables, in particular commitment and trust
- Communication for the enablement of coordination and supervision

Two approaches describing the role of the customer in the innovation process stand out in literature. Firstly, the works of Piller (2006) and Reichwald and Piller (2006,) which propagate having one's own open innovation approach within the framework of interactive value creation, should be referred to. Also of great importance are the explanations from von Hippel (1988, 2005) and the works in co-authorship (Herstatt, von Hippel 1992, Thomke, von Hippel 2002) on lead users.

#### **4. Lead users and their special innovation potential**

In an open innovation process, the company invites the customer to participate in the innovation process. While customer integration proceeds intuitively in most companies (Schallock, Bading 2006), the lead user approach represents a concept of systematic inclusion of customers who have an affinity for innovation. Lead users represent a very active and suitable customer group for integration into the innovation process (von Hippel 1986). Drawing on von Hippel (1986, 1988, 2005), ordinary customers are differentiated from lead users based on two attributes (Reichwald, Piller 2006):

- (1) Lead users have already had certain needs for a long time, before these generally appeared in the market.
- (2) Lead users also have the ability to develop a fully-functioning solution that satisfies their needs.

Thus, lead users have important characteristics that could be beneficial for radical innovations in particular. This is based on the premise that the customer is able to not only demand new services from an existing product, but also to use it in conjunction with something new (Reichwald, Piller 2006). However, incremental innovations can lead to a cost reduction of up to 80 percent and should not be underestimated. Radical innovations, on the other hand, are usually accompanied by a long-term competitive advantage (von Hippel 2005). But very few customers can play the role of a lead user within this sector. Customers with these characteristics are rare and very hard to identify. For the concrete implementation of the lead user method, von Hippel (1986) recommends a four-step approach. In step one, the company-relevant trend needs to be identified. Creativity techniques and trend research support this process phase. Characteristics for the customers to be found are thereupon defined. In the next step, leading customers within the well-defined market segment are identified. The earliest possible recognition is thereby of importance for the success of the lead user project and the integration of the customers (Herstatt 2001). Not all of the attributes looked for will be combined in one customer. The innovative product will predominantly result from the sum of the input from different lead users with specific characteristics. On the basis of customer ex-

periences resulting from different uses for existing products or on already completed product solutions, the data is analysed according to the company's internal criteria. In the final step, this data is transformed into a market idea with the potential of getting accepted by the majority of the users (von Hippel 1986).

Numerous researchers propose a broadening of this approach. In doing so, the projection is set before the trend analysis process (Lilien et al. 2002, Lüthje, Herstatt 2004, Reichwald et al. 2007). For companies, accurate planning of the project is essential for both the personnel appointed as well as for the required budget. As a result, this process is viewed as a preliminary stage to the actual lead user analysis. The phases of the trend analysis and the lead user identification proceed in a manner identical to the original model. However, the evaluation is supported by further measures. The most important conclusion is that lead users cannot be analysed through classic market research (Reichwald, Piller 2006). Idea competitions, screenings, pyramiding and, ultimately, virtual stock markets are helpful for their identification (Reichwald et al. 2007). The screening method is a questionnaire that surveys a representative sample on their willingness to participate. Pyramiding stipulates the use of social networks for the designation of lead users (Lilien et al. 2002). With pyramiding it is more likely to reveal potential for radical innovations, while screening, in contrast, identifies opportunities for incremental innovations (Reichwald et al. 2007). The third method, the virtual stock market, offers the opportunity of identifying lead users through use of fictitious stock trading (Reichwald, Piller 2006). Finally, the lead users are invited to concept workshops with the goal to make the customer's implicit knowledge available to the company through various creativity techniques (Reichwald et al. 2007).

If one takes a close look at the ideal type of progress in the innovation process, customer integration is in principle possible in every phase (Brockhoff 1998). The influence of the customer can vary depending on the phase in which the customer integration occurs (Enkel et al. 2005). In comparison to other customer groups such as reference customers or launching customers, the lead user integration is conceivable in all phases of the classic innovation process (Figure 2).

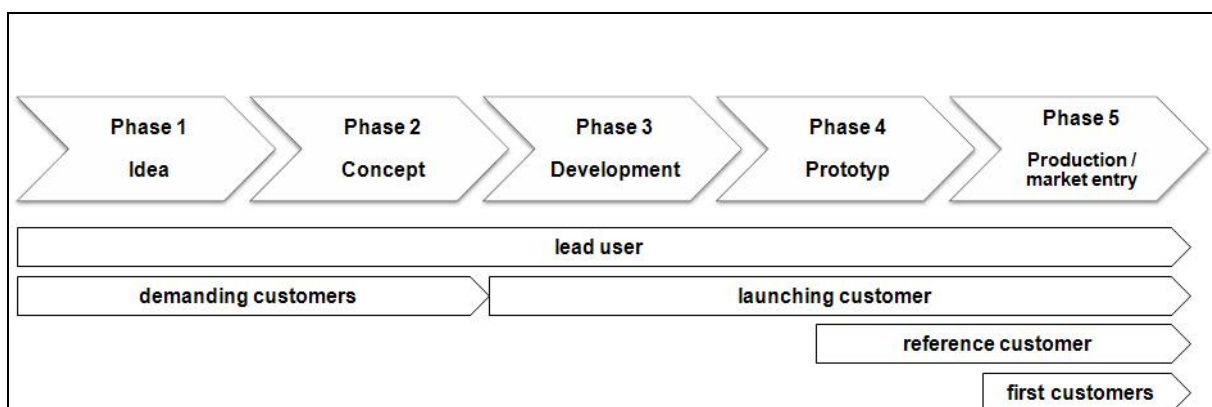


Fig. 2: Integration of lead users in the various phases of the innovation process  
 [Source: Beutnagel 2008 on the basis of Brockhoff 1998]

The lead user is confronted with other tasks in every phase. At the beginning it is suggestions, then concept ideas, followed by participation in the development in phase three, then aiding in prototyping and, ultimately, support through constructive feedback (Enkel et al. 2005). Generally speaking, the challenge for the companies lies in integrating the right customers at the right time (Lettl et al. 2006).

## **5. Conclusion**

The advantages of integrating lead users are to be found, as stated, in the increasing probability of radical innovation with shorter development times and lower budgets than would be required for a purely internal innovation (Urban, von Hippel 1988, von Hippel 2005, Reichwald et al. 2007, Richter 2008, Sandmeier 2008). Additionally, companies gain knowledge about future customer needs (von Hippel 2005, Richter 2008). This improved understanding of customer needs minimises the development risk and simultaneously increases the chances of succeeding on the market (Sandmeier 2008). In an application study carried out by 3M, it was shown that lead user innovations generated up to eight times more turnover than other types of developed innovations (Lettl et al. 2006). Being aware of customer desires and fulfilling them with the range of products and services offered can bring about competitive advantages. However, lead user integration is also linked to difficulties (Thomke, von Hippel 2002). An identification of lead users requires that companies have knowledge of future basic populations within the trend sector and can determine the lead users in this group. By participating in an innovation process, a portion of the process control is transferred to the lead users. This involves the risk of misuse and, in addition, the dependence on customers (Sandmeier 2008). An additional challenge can be traced back to the fact that not all trend-conscious customers of today represent the average customers of tomorrow. The process of lead user integration can also be quite cost-intensive (Thomke, von Hippel 2002), caused by, amongst other things, the efforts of active customer integration management (Sandmeier 2008). Other scientific studies came to the contradictory conclusion that the cost advantages can be located on the side of the lead user approach (Herstatt, von Hippel 1992). Due to the inherent strengths of the lead user method as well as the savings possibilities, Herstatt (2001) recommends that companies choose this approach within the framework of their innovation management as opposed to the more common classic methods. However, to identify and integrate the right lead user is a challenge in which success is often only evident during or even after the process.

In spite of the above-mentioned risks, lead user integration offers diverse opportunities of promoting the innovation process and creating unique selling points for the company. Supported by an active strategic and operative innovation management, lead users can result long-term advantages for companies.

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