

ON THE UNIQUE POTENTIALS OF LOCAL INNOVATION PANELS

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ABSTRACT

The management of innovation increasingly relies on customer insights. Identification, access to and recruitment of qualified participants are critical resources for open innovation. Contrasting literature on innovation communities and the practice of anonymous sampling with the requirements of an innovation laboratory we elaborate the notion of a demand-oriented local innovation panel and report managerial implications and lessons learned from its set up. The unique potential of this approach includes flexible recruitment for diverse purposes across all phases of innovation, highly targeted sampling and setup of sub-panels for live events and online studies, high quality of contributions, comparative benchmark and operational efficiency. Potentials and constraints of the approach demonstrate the value of this collaborative architecture for customer-centered innovation.

INTRODUCTION

Market-oriented innovation management increasingly relies on customer insights, whereas valuable insights rely on suitable insight providers. The position of the customer has successively changed over the last 30 years from a passive recipient, to a statistical average of market research data, to an active co-designer in the creation of value (Breuer, 1998). Potential users are being employed not only for evaluating, but also for co-developing new products and services. Setting up collaborative architectures and designing participation in order to leverage contributions from outsiders have become critical factors for open innovation development. Numerous forms of cooperation exist between producers and externals in different phases of value creation.

The starting point and one of the most critical issues of user research and customer insights generation is the identification and recruitment of suitable participants. Without rich contributions from the potential user base all research results will be poor. Privileged access to suitable research participants or samples is therefore a most valuable asset of a customer insights unit. However, set-up and management of communities or panels are usually delegated to external service providers. Analyzing their offerings related research literature focuses on innovation communities on the one hand and anonymous (representative) sampling on the other.

In contrast to these “supply-oriented approaches” to panel development, panel management and user recruitment, we deal with quite heterogeneous demands at the research and innovation laboratory of a large telecommunication company. Diverging demands require setting up and managing a “demand-oriented”, local innovation panel. It follows demands for an unusual variety of research questions and methods of customer integration in online and live research formats, and it needs to enable extremely flexible and targeted staffing of customer representatives.

We document the process, lessons learned and managerial implications from setting up a local innovation panel (LIP) in order to provide a case reference. More than 1000 members have been recruited, categorized and qualified with respect to different

innovation topics (such as new media, mobile services, or business applications). Regularly they participate in a range of research activities. Reflecting upon the unique potentials but also constraints of our approach and contrasting related case reports and theoretical contributions from literature we elaborate upon the local innovation panel as a new collaborative architecture.

Following this introduction we discuss related works on user panels and innovation communities. Specific demands for user insights and contributions within a dedicated innovation laboratory require a demand-oriented, local innovation panel that differs from the cases found in the literature. Our own definition of the LIP is followed by a brief discussion of similarities and differences to the cases from the literature. Elaborating upon our approach we reflect upon the set up and development of our LIP and discuss lessons learned from the process. We provide an overview of the studies conducted with the panel and discuss topics like segmentation, motivation, incentivizing, and communication. Finally we emphasize the unique value and potential only this kind of LIP provides for market-oriented innovation management. Concluding remarks address constraints, managerial implications and directions for panel design as a systematic and scalable approach to customer integration.

RELATED WORKS ON COMMUNITIES AND PANELS

Today successful innovators integrate users as co-designer in the creation of value. Until the end of the 1970s management was dominated by the manufacturer active paradigm: It was manufacturer's task to identify target groups, discover user needs and, building on this, develop and implement promising, innovative ideas. The user's role within this paradigm was purely passive, in the sense of "speaking only when spoken to" (von Hippel, 1978, p. 243). According to the antipodal customer active paradigm the essential activities are borne by the users: They generate ideas, formulate concepts and implement ideas as prototypes. Afterwards they transfer their development and knowledge to manufacturers, who check market potential, develop innovations, produce and commercialize them (von Hippel, 1978). The so-called cooperative model (Gemünden, 1981) postulates a match between the level of requirements aimed for with the solution and the degree of interaction between the manufacturer and user, whereby for a large innovative step, particularly intensive interaction is to be recommended. A balance between technology and benefits does not come from activities carried out separately, but rather from a learning process on both sides. In our approach, user integration is accordingly understood as a type of intensive interaction between manufacturers and users, which goes far beyond traditional market research. In other words, selected customers adopt the role of active co-designers of the process of innovation (Brockhoff, 2003).

Since Internet-based communities have gained popularity and media attention in the 1990ies a broad variety of communities and user panels emerged. While popular and academic media celebrated historically dominant types from virtual communities (Rheingold, 1993) to the wisdom of crowds (Surowieki, 2004) some authors tried to systematize the field working out similarities and differences, to evaluate trade-off and to define guidelines for the successful integration of customers into the innovation process.

There is no generally accepted definition of the community construct. Already in the fifties Hillery (1955) uncovered ninety-four different definitions of community. In an innovation context where the internet serves as a suitable communication medium the following definition may suit: "(Virtual) communities are an aggregation of individuals or business partners who interact around a shared interest, where the

interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms” (Leimeister und Krcmar, 2004, p. 2717).

Reviewing case studies and related literature we identified four main dimensions in which innovation-related communities are differentiated: initiative and management, phases in the development process, degree of company-user interaction and communication channels, openness and governance. We briefly discuss literature within these dimensions and explain in how far they may be subsumed to the notion of “supply-oriented” panels. This prepares the definition and explication of our own approach to set up a demand-oriented access panel.

Initiative and management

Regarding initiative and management we distinguish between user-driven and corporate communities and panels, with open-source communities as a special case. Thus, communities can be initiated and run by companies (Dahlander and Magnusson, 2005; Bernhoff and Li, 2008; Di Gangi and Wasko, 2009), by intermediates (Sawhney and al., 2003; Verona and al. 2006) or by the members themselves (Franke and Shah, 2003; Raasch and al., 2009, Lüthje and al., 2005; Franke and al., 2005).

User initiated communities are initiated and run by the users and do not have a commercial purpose. They generate innovations through the collective exchange of knowledge (Lakhani and von Hippel, 2003; Lüthje and al., 2005; Franke and al., 2005) or collaborative work (van Oost and al. 2009). Examples of user communities can be found for instance in the extreme sport area (von Hippel, 2001; Franke and Shah, 2003), where advanced users invent new sports equipment to push their activities to the limit (Hienerth, 2006) or in software development (von Hippel and von Krogh, 2003), where user programmed software may perform even better than their commercial counterparts (von Hippel, 2001; Lakhani and von Hippel, 2003). Other examples can be found in the music industry (Ziv 2008) or even in the development and administration of a local wireless network (van Oost and al. 2009). In these cases the users act independently from a company to satisfy his or her own needs. Companies becoming aware of such user innovations may integrate them in their product range (Franke and Shah, 2003).

Communities that are initiated and *run by a company* aim to foster innovation. Examples of communities which have been set up for innovation purposes can be found in different industries, like software (Dahlander and Magnusson, 2005; Bernhoff and Li, 2008), computer and telecommunication (Di Gangi and Wasko, 2009; Stuermer and al., 2009). They are also found in consumer markets like household goods and fashion (Ogawa and Piller, 2006; Di Maria and Finotto, 2008).

The source code of software offers good conditions for a collaborative respectively community work. “Open source” software development invites everyone with programming skills to participate. Since Netscape published its source code in 1998 several companies set up *open source communities* inviting users to participate in the programming process (Stuermer and al., 2009, Dahlander and Magnusson, 2008) or providing toolkits to the supporting community (von Hippel and Katz, 2002; Thomke and von Hippel, 2002).

Some communities do not focus on innovation but rather on shared interest of the members (Kunz and Mangold, 2004). Therefore they can be called *communities of interest* (Hagel and Armstrong, 1998). These communities can be initiated and run by companies (e.g. brand or product communities), by users (e.g. for hobby fields like cooking or sports) or by intermediates for all kinds of topics (e.g. platforms for

product evaluations). Even though communities of interest serve the private pleasure of their members, knowledge is being accumulated through the exchange of individuals (Kozinets, 1998; Sawhney and Prandelli, 2000; Füller and al., 2007) and the support of the internet. As this knowledge is freely accessible in terms of the member contributions companies can harness knowledge by observing these communities, still conforming to ethical rules (Kozinets, 2002).

Different phases and purposes

In the literature there are many models for the process of innovation, which vary in the terminology used, in the number of process phases and in the diversity of sequential or parallel activities.

Reichwald and Piller (2009) describe the shift from problem-oriented to solution-oriented contributions from the periphery of the firm. Within the early, *problem-oriented phases* they expect potential customers to be capable of most valuable contribution whereas in the later phases expert input is needed (Reichwald and Piller, 2009). Need information includes desires, preferences, factors for satisfaction and buying motives based on an understanding of usage environments; explicit or latent needs relevant for innovation (what is the use) and operations (production numbers and variations and marketing segments); reduce flop rates. *Solution oriented* information includes technical knowledge and technologies, how to satisfy customer needs, often in terms of best practices.

Largely independently of the sector or situation, one can differ between the phases exploration, idea generation, selection/execution and commercialization (Trommsdorf and Steinhoff, 2007; Verworn and Herstatt, 2002; Gerpott, 1999). With respect to the different phases in innovation customer integration may focus on single activities and phases or span complete innovation development lifecycles.

The *exploration* phase refers to the initial fuzzy front end of an innovation project. Exploration aims at a deep and integrated understanding of current and future customers in terms of e.g., their living/working situation, unsolved problems, needs and wants. In the exploration phase are product related communities of interest, where users talk about certain products, in the focus. Community observation methods like “nethnographie” (Kozinets, 1998, 2002) a systematic approach to scan relevant communities for innovation related contributions, generate valuable insights about certain target groups (Sawhney and al., 2003, Sawhney and al., 2005) or hints for product improvements (Di Maria and Finotto, 2008). There are also examples, where companies setup own forums and blogs to address fans of their products and to build a platform for user observation, according to their specific context (Sawhney and al., 2005).

The *idea generation* relates to the search for ideas for innovations as well as any initial pre-selection. Ideation communities, setup and managed by a company are a structured approach to generate ideas together with customers. Within innovation communities users can provide their ideas in predefined categories e.g. product or sales process. Ranking functions allow first evaluations of the contributed ideas (Di Gangi and Wasko, 2009, Ogawa and Piller, 2006).

In the third phase, *selection/execution*, the investigation of the feasibility and the return on investment of the innovation in the marketplace take priority. Selection means that ideas for innovations are reduced to those which could potentially be successful. In the execution phase, the emphasis is on development activities, which are generally dominated by the production and test of prototypes (Gruner and Homburg, 2000). Traditional methods of market research like quantitative

questionnaires are suitable tools to evaluate and select ideas with a large number of test persons. Due to product affinity communities of interest are interesting basis for sampling. An interaction in terms of a questionnaire, where new ideas are presented to members of a carefully selected community of interest gives a valuable feedback from the relevant target group (Shawney and al., 2005; Verona and al., 2006; Bartl and al., 2004; Füller and al., 2006). Presented ideas could either have a rough status like in the ideation phase or more mature concept like in the selection phase

The *commercialization* covers the introduction of the innovation to the market. Normally, the product has already been successfully tested in pilot installations, so that in this phase the emphasis is on addressing the wider market. In the interest of designing the operational processes as efficiently as possible, product changes are now only marginal in nature. In this phase only software and user initiated communities are relevant. Software communities conduct test activities in terms of beta testing and within user communities a first diffusion process through the participants of the communities takes place (von Hippel, 2001; Franke and Shah, 2003, Hiennerth, 2006).

Closely related to the phases in the innovation process is the *purpose* of a community or panel. The primary purpose may be to provide insights on emerging customer needs, to generate ideas for new products and services, to support design and development, or to gather feedback on concepts or prototypes. With regard to product development and innovation the purpose of communities ranges from the exchange about common interests (Kozinets, 2002; Füller and al., 2007) over the generation and evaluation of ideas (Bernhoff and Li, 2008; Di Gangi and Wasko, 2009) to the development of new products, especially in user initiated and open source communities (von Hippel, 2001; Franke and Shah, 2003; Dahlander and Magnusson, 2005 and 2008). In both the whole development process takes place within the community. The community members develop and test the innovation in a collaborative manner.

Degree of company-user interaction and communication channels

Different types of communities and methods demands different degrees of interaction between the panel or community members and the company. Different channels of communication are utilized. The more intensive the dialogue the more a company can profit from the knowledge, opinion and creativity from the panel members.

In user initiated innovation communities the development process happens without a company interaction. Only when companies become aware of advanced developments they contact the user community. Community observations for insight generation are also characterized through no interaction between the company and the certain community members. A *low level of interaction* provide traditional market research methods, where the interaction is only punctual by filling out the questionnaire (Bartl and al., 2004; Füller and al., 2006) while within ideation communities a constant and intensive dialogue takes place (Ogawa and Piller, 2006; Di Maria and Finotto, 2008). An exception are open source communities where the interaction tends to concentrate mainly on a *high interaction mode*. Without an intensive engagement with the users and its contributions a company can hardly profit from the complex developments from software communities (Dahlander and Magnusson, 2005; Jeppesen and Molin, 2003; Jeppesen, 2005).

Closely related to different formats of more or less intensive company-user interaction is the selection of optimal communication channels. The community and panel

members either communicate virtual (Franke and von Hippel, 2003; Bernoff and Li, 2008; Dahlander and Magnusson, 2005; Füller and al., 2007) or face to face (van Oost, 2009; Di Maria and Finotto, 2008; Sawhney and al., 2005). Academic discussion and corporate engagement in communities became significant with the ubiquity and usability of the internet, and until today most communities are organized and communicate *online*. While telecommunication provides powerful tools for efficient communication and interaction its effectiveness is limited when nonverbal communication, rich media interaction and necessity of learning (such as in user clinics; Breuer, Wogatzky and Steinhoff, 2009) come into play. Advanced methods of user and market research require live interaction or observation in real-world setting. While *face to face* interaction and live participation are indispensable for several advanced methods of customer integration, local availability that characterizes local panels and face to face communities has been widely neglected in the literature.

Openness and governance

Pisano and Verganti (2008) discuss collaborative architectures (sometimes called collaboration networks) with respect to participation respectively openness and governance, and discuss their tradeoffs.

Openness refers to the question who may join a project, ranging from totally open crowdsourcing to elite expert clubs. While open networks require that participation and evaluation of potential solutions are easy, closed networks require that the initiating firm knows who to involve and which domain to explore. *Governance* may be hierarchical if one firm has the knowledge and capability to define problems and evaluate solutions, or flat if these decisions are left to the network.

Combining both dimensions the authors differ between a closed and hierarchical elite circle, a closed and flat consortium (usually with business partners), the open hierarchical innovation mall (like Innocentive.com where companies post problems) and the open flat innovation community (like Linux).

Within this matrix the idea of the local innovation panel is to flexibly shift between both dimensions in order to interact with externals in the best ways serving the demand of individual activities or studies. Contrasting these above approaches from the literature the local innovation panel was designed to flexibly serve a variety of research formats and purposes, forms of interaction and governance.

LOCAL INNOVATION PANELS

Organizations must carefully consider which relationship to enter in order to support their strategy for creating and capturing value, and which trade-offs, potentials and operational efforts are involved (Pisano and Verganti, 2008). Some companies (like IBM and Apple) use a combination of collaboration modes. Suitable collaboration modes and preferred relationships to potential customers depend on the goals and activities (projects) of the organization, in our case a dedicated innovation unit for research and development in the telecommunication industry.

The *innovation unit* is an affiliated institute of the Technical University of Berlin. Scientists and industry experts develop solutions for tomorrow's communication. The bundling of business and science creates the condition for a successful transfer of research results in marketable products and services. It consists of two think tanks, strategic research laboratory and innovation development laboratory. While strategic research is concerned with the basics of the communication technologies of the future, innovation development conducts product development and, thus, functions as a pre-stage for new products and services of the company's business fields. The focus of the

interdisciplinary work lies in the technical as well as the market-oriented development and evaluation of innovative ideas, the realization of prototypes and demonstrators, the derivation of business models, and the transfer of the results into the business fields. The requirement for implementation is a combination of technical innovation and business relevance: on the one hand, what differences does the development make in comparison to the status quo and, on the other hand, what expectations does the user have for new products and services?

Differing from most cases documented in the literature a major challenge for the development of a local innovation panel for a corporate research unit was to not only serve a single predefined, but several even yet unknown purposes. Most of the communities provided by panel providers providing a tailored supply (like Atizo for pharmaceutical ideas) were not sufficient to reach this goal: to conform to the range of different requirements from various research projects, and to enable fast and flexible recruitment of qualified participants for a range of yet unknown topics and studies. In contrast to the mostly “supply-oriented” cases described in the literature we call this a “demand-oriented” approach, first to the set-up of the panel itself, and second to the individual recruitments of participants.

The basic panel setup was designed to support a wide range of open innovation activities. From this pool of resources participants for individual studies are then recruited on demand. Developing this “demand-oriented” panel to flexibly support heterogeneous purposes the following requirements had to be addressed:

- Qualified samples need to be recruited in a fast and reliable fashion.
- Different questions and tasks need to be addressed through participation of users – all phases of the innovation process (exploration, ideation, specification and evaluation) need to be supported.
- Local availability is needed to support face-to-face interaction as required for live user clinics or prototype testing in home environments.

Before we describe the set-up and details of the local innovation panel we briefly contrast the approach to similar approaches from the literature discussed above:

In comparison to the above discussed community types and interaction modes the LIP is a company initiated and managed panel format, which is applicable in every step of the innovation process. Similar to “access panels” (ISO 26362, 2009) – which usually operate online and under the direction of service providers – members participate in a variety of research projects. Panelists agree to provide their knowledge, opinions and skills for innovation projects and studies. A common interest consists in the innovations and products of the company. For each project participants are carefully selected and combined, following suitable rules defined through research and participation frameworks such as ethnographic studies, ideation workshops, quantitative questionnaire interviews or usability tests.

The group of participants is *initiated and managed by the corporation*. This allows member recruitment and interaction modes adapted to individual project demands. User-driven community aspects are contained through the self-selection of members to participate in the panel as such and in individual studies. Community aspects are also realized when panellists participate in studies involving blogging or collaborative live events like user clinics (Steinhoff and Breuer, 2009; a large open space live event for all 1000 members is also planned for the near future).

Rohrbeck and al. (2008) showed that German companies tend to integrate customers and communities online in early phases of innovation. This corresponds to the results of our literature analysis showing that customer integration mainly takes place in the exploration and ideation phase. Still, later phases related to testing and marketing

interaction with potential customers contribute to new product success (Gruner and Homburg, 2000). Accordingly the local innovation panel serves heterogeneous demands *across all phases* of innovation. This is enabled by the mixture of appropriate user integration tools.

While *medium degrees of interaction* are typical for a local innovation panel, interaction may be intensified through customer advisory boards, or reduced within online access panels. In ethnographic studies no interaction occurs. Interaction with or setup of an innovation community serves from a company view one predefined purpose like getting insights or generate ideas. In these terms an innovation community provides only single building blocks but cannot cover all demands of a user driven innovation process. The LIP on the contrary aims at increased flexibility through a multi-purpose and demand-oriented setup, allowing for multiple interaction modes from virtual to face-to-face.

Finally the local innovation panel combines aspects of *openness* and closeness. Openness applies within online studies as participation relies on self-selection of panelists. Reichwald and Piller (2009) describe self-selection of participants as an essential characteristic of interactive value creation through open networks. Depending on the goals of a study the local innovation panel allows to compile a targeted number of participants for live events such as user clinics or field studies. Regarding *governance* the local innovation panel is basically managed by the company bottom-up decisions in favor of or against concepts is a regular part of studies with a decisive impact on the continuation of innovation projects.

Closer to our Local Innovation Panel than most of the community concepts is the notion of the panel as it has been defined as “a sample of respondents who have agreed to provide information at specified intervals over an extended period” (Malhotra and Birks, 2007). Differing from our approach the authors have mainly longitudinal studies in mind, trying to explore changing attitudes towards stable variables.

Access panels (ISO 26362, 2009) on the other hand, managed by intermediates like market research institutes allow representative (usually online) surveys and targeted sampling. But access panels can also not fulfill all specific needs of a single company, including industry specific recruitment, local availability and deep knowledge about the panel members, based on face-to-face interaction. Our local innovation panel may be characterized as an access panel as well since different variables are gathered at different time slot from a pool of people. Still, within the context of innovation management including early phases of innovation we do not require representativeness, nor may we rely on online studies only. In order to address shortcomings of traditional market research and to transfer methods in order to acquire valid data from potential customers several of our studies require live interaction. One example is the user clinic format to assess new innovative products and generate vital information on the needs of future product users. This is largely achieved with three aspects, two of which may only be achieved within live settings: an intensive learning phase, interactivity and a multi-method approach (Breuer, Wogatzky and Steinhoff, 2009).

Figure 1 shows an overview of these community types and interaction modes related to the innovation process and the degree of company-user-interaction. The LIP can be used in all phases of the innovation process and with different levels of interaction.

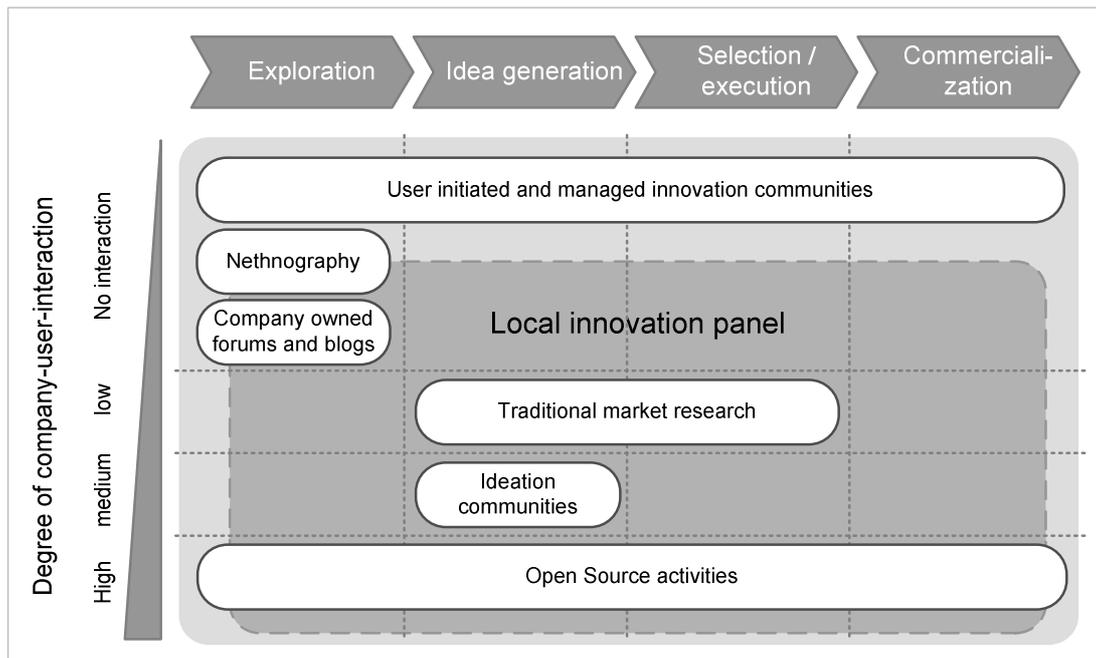


Figure 1: The local innovation panel inside the community landscape

A LOCAL INNOVATION PANEL FOR USER RESEARCH IN TELECOMMUNICATIONS

Being set up to conform to the requirements of the innovation unit described above, the local innovation panel called “Innovationforum” consists of more than 1000 participants (April 2011). A service provider supports the management of the database, the communication with panelists, and the implementation of online studies. The following paragraphs describe the panel development and the range of studies.

Demand-oriented set up and development of a local innovation panel

The panel setup was divided into two steps: 1) setup of the infrastructure and definition of the desired member structure and b) recruitment of participants. Following the initial setup a careful management ensures member structure quality, member motivation and expansion.

The first activity was to set up the LIP infrastructure including a technical, communication and legal framework. An exclusive email server, a suitable email-address and a telephone hotline had to be installed for the regular and direct communication with prospective members. We set up a website with information about the panel and the possibility to register. Finally we defined the legal preconditions in terms of eligibility requirements, data privacy terms and guidelines regarding data handling.

The desired member composition was defined to flexibly provide user research participants on demand. On the one hand we anticipated requirements in terms of general customer characteristics, e.g. to fulfill certain quota relating to age and gender, to cover all defined corporate customer segments and to include own and competitors customers. On the other hand additional customer and user groups needed to be represented, e.g. customers of television products, users of certain devices like iPhones, and users of certain services like social networks and location based services. All members live in the metropolitan area of Berlin in order to allow for face-to-face communication. Since Berlin has a large diversity of inhabitants and plenty of creative

businesses, research institutes and universities, we expected to easily find enough creative and early adopters of IT technologies with sufficient affinity to innovation.

In order to recruit a sufficient initial member base we developed a master data questionnaire to be filled out by every prospective member. It includes general questions on demographics and personality, telecommunications and behavior related questions, questions on the usage of internet and different devices, and attitudes towards telecommunication technologies. It also contained specific questions which are relevant in connection with the different research areas of our innovation unit.

The second step in the setup process was the recruitment of suitable LIP members. Different recruitment channels were used to acquire the desired member structure: to attract existing customers we contacted Berlin customers of the company via letter and e-mail and invited them to participate. In order to attract certain groups like technology affine persons we promoted the LIP in telecommunication and IT industry related blogs and forums, in order to invite students we presented the LIP at the Universities of Berlin. Next to this target group specific promotion we conducted different other activities, like setup of a Facebook website, advertisement in local Berlin magazines or distribution of posters and flyers.

Today the “Innovationforum” counts over thousand members with different characteristics, skills and lifestyles. It includes employed and self employed persons from over 30 industries, a wide variety of internet users from novices to experienced bloggers, gamers and programmers, people with very different communication behavior from the traditional fixed line user to people which communicate exclusively over social networks or microblogs. Age groups include like teens, students, young professionals, mid-agers, families or seniors, all defined customer segments of Deutsche Telekom and customers from German service providers. Background information about usage behavior patterns in relevant research areas like ICT in in-car environments or IPTV is available. Subpanels include a group of more than 100 lead respectively advanced users (measured through the criteria innovativeness, their technology expertise and their involvement), and other groups according to the specific demands of our project partners. While participants provide this information within an initial questionnaire, additional information like outstanding qualification for creative exercises or in-depth discussions on privacy concerns is gathered after each study and added to the data base.

We faced two major challenges in the set up process. First different corporate departments had to be involved which entails necessary but also time consuming and complex alignment procedures. For the technical set up the IT department was involved. All legal and data security issues had to be coordinated with the corporate legal and privacy departments. For all public relation relevant activities like the development of the website, the recruitment activities or the web design of online questionnaires a close alignment with the corporate communication department was necessary and for the recruitment of existing customers for the LIP we worked with the local sales and retail departments. The second challenge in the set up was the recruitment itself. The response rate to our different promotion activities was initially lower than expected. Therefore we used additional promotion channels like online advertisement in target group specific social networks, and other established networks like student mailing lists of Berlin universities. The panel was actively promoted at public events like the Berlin “long night of science”.

Quality of member structure and member contributions are major challenges in the administration of online access panels (Grübl, 2010). A LIP faces similar challenges.

Both qualities depend on the ability to recruit suitable research participants, on the involvement of the members, and a constant stream of new members.

Poor *involvement and motivation* of members result in high fluctuation rates, low response rates and reduced data quality. Besides extrinsic stimuli like monetary incentives a high intrinsic motivation and a basic interest in telecommunication and research and development topics is needed. In order to reinforce motivation several *communicative measures* were taken: We regularly point out that the members are an important part of our innovation process and showed how their contributions impact real developments. A three-monthly newsletter provides selected results of studies. Online research is enhanced through professional illustration of concepts, animations, and sometimes video. "Offline" members are regularly invited to in-house events visiting the research facilities and discussing with researches and developers face-to-face. The variety of study formats, members are involved and the innovative topics prevent from monotony and keep members interested. In case of questions on behalf of the panelists an instant hotline and an e-mail address are always available. Complementing these, from our point of view essential, communication-related measures we provides *monetary incentives* (usually about 5 Euro per online-study, up to 50 Euro for a three hour live event) to ensure a minimum extrinsic motivation. At the end of each year participants may trade their monetary vouchers into cash, little presents or donations.

One important success factor of open innovation research refers to choosing suitable users for integration based upon specific characteristics (Alam, 2006). With respect to ideation average users might have difficulties imagining the future and articulating unconscious future needs. Functional fixedness refers to the users' tendency to concentrate on their existing knowledge about the way products are used at the present (Leonard, 2002). On the other hand, users who are experts in the market, in the product category or in the core technologies might be very well able to provide sufficient high quality information even in the context of radical and disruptive innovations (Reidenbach and Grimes, 1984). Another interesting user group are lead users (von Hippel, 1986), particularly advanced customers who will especially benefit from the solution to a particular customer problem that is relevant for the future. They differ from average customers both in their ability to perceive the needs of the market at an early stage and in their significant interest in a solution to a problem, with the associated high motivation for cooperation. In sum, users to be integrated into innovation research should be selected carefully and with respect to the specific information needs of the referring phase. Different study and interaction purposes require participants with different usage behaviors of technology and varying characteristics and skills.

Thus, to deliver suitable test persons for each purpose a detailed *knowledge about the participants* is indispensable. Initial information is available from the master data. A regularly actualization of the questionnaire items is necessary to keep data up to date, also regarding new social and technological trends like e.g. the upcoming usage of Tablet-PCs. Coverage of technological trends should also be considered in the member structure. For instance the development of Android based applications became part of many development projects due to the developer friendly open interfaces of the Android software. For some user studies such as usability testing for mobile applications Android users were required who are familiar enough with the operating system that they provide valid feedback on the new application without struggling with basic Android design principles. Therefore we restocked the initial

comparative small group of Android users with target group specific promotion in respective Android forums.

In addition to the general data we differentiate between topic specific subgroups. Subgroups contain people with special skills like outstanding creativity, specific knowledge e.g. about entrepreneurial issues, privacy concerns, gaming, or specific life styles like frequent travelers. At this point the proximity and continuous face-to-face collaboration with the participants become a major advantage, since members may be subsequently qualified for special tasks. The right mix of individual participants is particularly decisive for the quality of results e.g. in user-developer-workshops or ethnographic studies. Through the personal and regular contact with panelists we are able to assess each candidate's fit for special subgroups and purposes. E.g. for ideation workshops creative participants need to produce a lot of ideas in a short time. For business modeling workshops participants with industry knowledge or experiences with business plans and models are needed. Some characteristics cannot be evaluated through forefront filled out questionnaires, but only through personal experience with the individual.

An example: One student was invited to participate in a workshop on updates for mobile phones, based on his profile as smart phone user that was available from the master data questionnaire. Within that workshop he showed himself being extraordinarily engaged and interested in a variety, also technological topics, and quite communicative and open-minded at the same time. As a consequence he became a top candidate and participant for another ethnographic study dealing with voice innovations and another ideation session on personal communication. Just like in the recruitment of new employees: Without the initial face-to-face experience it would not be possible to easily recruit such candidates with confidence.

After several studies a „professionalism-effect“ on behalf of panel members may occur. A steady stream of new members is necessary to guarantee a well-balanced mixture of experienced and new members and to fill the gap left by inactive members. Today we increasingly gain new members from mouth recommendation. The mixture of highly motivated members combined with a high quality and up-to-datedness of the member data is an elementary basis of a smooth performance of the local innovation panel.

Range of research activities.

Mediated by a range of user centered methods panelists contribute to innovation projects. Beginning at the start of the innovation process we conduct ethnographic studies to explore existing and latent customer needs. We invite users for all kind of ideation activities. Different online and offline methods allow us to evaluate and select product ideas and concepts. With the help of usability and home use tests we evaluate the ease of operation and realization of prototypes (Steinhoff and Breuer, 2009). The LIP is the base for all those kinds of user studies – online and live. Exemplary topics included:

- Usage and barriers of mobile email: Ethnographic exploration with 16 mobile professionals. They were accompanied half a day each on the road and at their workplace.
- Website speed optimization: An exploratory online study with more than 500 participants yielded the most valuable intervention points for internet speed optimization.
- Digital life logging: Panelists accessed an online tool named innovation pump to generate and evaluate ideas for new products and services in an iterative fashion.

- 3D gesture control: Embedding video snippets to online questionnaires we asked panelists to rate and match television functions to operating gestures.
- Internet Television: Within live user clinics participants interact with moderators and tangible prototypes to co-develop and bundle new product offerings.
- Privacy concerns for speech logging: As a follow up to idea generation and usability testing selected panelist defined minimum privacy requirements for speech logging.

A regularly reoccurring activity for panelists is an invitation to online bus studies. Originating from traditional market research, different topics from different project partners can be evaluated in one online survey. This allows handling even minor research questions, which would usually not suffice for a dedicated study with its operational effort. A flexible combination of different topics with a varying length is possible within these “bus studies”. Last but not least the deep knowledge about the LIP members allows for an efficient questionnaire design since each members master data (like age, gender, income but also information like involvement, adoption behaviour and usage of certain devices) are already available and may be utilized in order to interpret results.

With regards to these online studies the LIP enables a benchmark system for comparative concept evaluation. Concepts are being evaluated on standardized five-point Likert scales with respect to spontaneous impression, relevance of the problem solution and usage intentions as well to further acceptance dimensions based on a semantic differential. The average values of the top two and bottom two values of all tested use cases constitute a benchmark system for bus studies within the LIP. Relatively over- and underperforming ideas can easily be identified and interpreted as indicators for market acceptance. In-depths investigations into the composition of high or low evaluators may show if an idea might be attractive to small target groups or niche markets only. Through the steadily growing number of reference studies individual comparisons are possible in addition to an increasing pool of references making up the benchmark system.

Within the last two years twelve bus studies (including four small online studies – called taxi studies) have been conducted and contributed to the benchmark. For 21 studies (some consisting of several activities like diary studies, ideation workshops, online studies and usability tests) participants have been recruited from the LIP. Matching the numbers of participants from the panel to the four phases of innovation projects in 2010 we had: more than 100 participants in exploratory activities, almost 100 in idea generation, almost 3000 in selection / execution (most of them respondents within the online bus studies, about 150 in live clinics), and 120 in commercialization related activities (i.e. field tests).

UNIQUE VALUE AND POTENTIAL OF LOCAL INNOVATION PANELS

Local Innovation Panels like the one described above enable a fast and flexible collection of business and development critical information from qualified contributors. The key strength of the LIP is its *flexibility* serving a great variety of customer related questions. Trends and innovations can be evaluated quickly; qualitative dialogs can be initiated easily with the right people. While user innovations communities mostly focus on the ideation phase (Rohrbeck et al., 2008) and online access panels are limited to traditional market research methods like quantitative surveys in the selection phase the LIP leverages customer integration along the whole innovation process through the allocation of excellent and suitable test persons in combination with the appropriate method. The LIP allows topic and

target group specific sampling of participants with different roles and competencies: Panelists deliver customer insights in ethnographic studies. They engage in ideation workshops, online ideation, or act as co-developers in product and service specification. They rate product ideas and concepts in quantitative surveys, or test the usability and experience of prototypes.

Another unique value of the Local Innovation Panels is the local availability of members allowing for *face-to-face* interaction. Local availability and live interaction allows panel operators to get to know panelists much better than an online access panel would allow, and to qualify subsamples of extraordinary critical, privacy sensitive, or advanced users. Quantitative online and face-to-face studies may be combined flexibly allowing for advanced triangulation of data and research results. The high commitment on behalf of panel members resulting from this close loop interaction also results in trust and a high readiness to share even sensible data and allow deep insights into the private life (e.g. within ethnographic studies). Both aspects are indispensable for a demand oriented access to potential customer insights, but are not achievable through an exclusive online access panel or an ideation oriented innovation community.

In the direct comparison with online access panels the LIP offers some great advantages. Different topics lead to a high *involvement* of the LIP members. In internal discussions we trace the high involvement back to the distinct interest of the members in technology and innovations, the possibility to participate in the product development and careful management of participants through communicative measure like the feedback to member contributions, the newsletter or the telephone hotline. The high involvement is reflected in different numbers. Several researchers recommend that standardized online interviews not to exceed 15 to 20 minutes on behalf of the participants. Still, evaluating trade-offs between the minimum required set of questions and topics within a single study and the danger of losing participants due to the length of the questionnaire most of the online studies we conducted took 20 to 30 minutes to complete the set of questions. Given this and the frequency of about six studies in one year the following quantitative characteristics are worth mentioning:

- Average Response Rate of the six online studies conducted in 2010: 52 percent.
- Average Dropout Rate for a single study (all online studies in 2010): 6 percent.
- Panel mortality (participants removed from the panel due to missing activity, double registration or contradictory data since April 2010): 5 percent.
- Number of participants having participated in every online study since they participated in the first online study: 49 percent.

These numbers are impressive considering that online access panel struggle with decreasing response rates and a poor quality of answers and contributions of panel members (Grübl, 2010). The high involvement of the LIP members appears also in the responses to open questions, which are characterized through detailed and elaborated comments. Several times panelists even send emails contributing additional ideas to topics they became interested in. Also the participation rate in face-to-face activities is very high (with response rates to invitations exceeding 70 percent on some studies).

From a business view an essential advantage are the *low costs* and the prompt integration of the customer in all phases of the innovation process. Through standardized parts of questionnaire design and established processes the costs for the development and conduction of online studies within the LIP could be lowered

significantly. To evaluate the exact difference of the savings we solicited different offers. In comparison to common costs of online studies with the same complexity, the online studies within our LIP cost less than two thirds. Costly recruitments of users and test persons with changing service providers are omitted. Early integration of the customer into innovation development may lower costs and time of development and increase the acceptance of the innovations in the market. The likelihood to take the wrong decisions in the innovation process can be reduced.

Thus, compared to innovation communities and online access panels a LIP has several advantages:

1. Diverse kinds of customer related questions may be addressed along the innovation process through a tailored mixture of suitable candidates and appropriate methods.
2. Subgroups allow flexible sampling of customers with outstanding skills or preferences based on accumulated knowledge from previous encounters.
3. Local availability allows direct interaction, advanced data triangulation (e.g. combining live and online study results) and deep customer insights.
4. High involvement of members may be achieved, leading to a high quality of contributions.
5. Online bus studies provide for operational efficiency and comparative benchmarks. Standardization of activities saves time and money.

Since different kinds of access panels and their utilization are difficult to compare *evaluation* of panel activities remains an unsolved challenge. After two years of running the LIP we conducted a feedback survey in order to evaluate our activities and to explore potentials for optimization. An online survey was conducted among members of the Innovationsforum. Data was collected over a three week period in the end of 2010. The average length of the study was 6.5 minutes. Survey included closed as well as open questions. Results included:

- More than 90 percent of the 519 respondents are overall satisfied with the Innovationsforum. More than half of all respondents already recommended the Innovationsforum to friends, acquaintance or relatives.
- Unprompted almost one third of the respondents is satisfied with the Innovationsforum because of the innovative ideas and topics tested in our studies. Another 28 percent like it to be involved into product development.
- Satisfaction with workshops, focus groups and prototype studies is slightly higher than with online surveys. Considering only Lead Users, everybody was at least satisfied with offline studies.
- Overall participants are highly satisfied with the different aspects of on- and offline studies. Again, members rate workshops and focus groups slightly better. An aspect to focus on is the study length for online surveys.
- Cash incentives are more accepted for offline studies than vouchers. Members are highly satisfied with the bonus point system for online studies. Almost 2 in 3 would like to keep this system. Sweepstake attractiveness is slightly lower. Members prefer vouchers to technical sweepstakes
- 70 percent of the members read the newsletter. They are specifically interested in the feedback on the results of the surveys and they consider it as being up-to-date and attractive. Members don't perceive the publication cycle as being too short.

The answers of the feedback survey show a high satisfaction of panellists. Being asked through open questions for the reason of this high estimation participants named the innovative ideas and the opportunity to participate in product development.

CONCLUSIONS

Contrasting literature on innovation communities and the practice of anonymous sampling with the requirements of an innovation laboratory we elaborated upon the notion of a local innovation panel and report lessons learned from one case and its set up. The unique potential of this approach includes flexible recruitment for divergent purposes, highly targeted sampling and setup of sub-panels for live events and online studies, continuous involvement in iterative research and development and the vision of a learning panel and customer advisory boards. Instead of a single idea in-out interaction a continuous collaboration can be established. Different from online- and access panels the local innovation panel does to aims for representative sampling, but requires local availability of members in order to conform even to high methodological demands of advanced user and innovation market research.

Some *constraints* of a LIP need to be considered: Restricting participants to inhabitants of a single city and its vicinity does not allow studies that are representative for a larger market. On the other hand specific user groups like lead users and early adopters are better able to assess new developments within an innovation context including early phases than the representative “average user”. Communities focused on ideation or communities of interest may outplay a demand-oriented local innovation panel. Due to their larger member base and openness more ideas or insights might be generated. Still, ideation with several selected members is able to generate project specific ideas in a fast and easy manner. Besides, the identification of innovation relevant data within communities of interest is a time consuming and complex issue (Henkel and Sander, 2003). Open source communities and certain innovation communities allow outsourcing of the innovation process or certain steps, like ideation, concept or selection activities to users (Dahlander and Magnusson, 2005, Ogawa and Piller, 2006). Within a LIP all activities are arranged, managed and supervised by company employees – outsourcing is neither possible nor desirable.

From a *management* point of view we can document several lessons learned: While a LIP is too complex to handle for a small or medium enterprise it empowers research and development departments with a large number and variety of customer integration activities. The expenditures for the basic panel management are compensated through the lower costs per study due to standardization aspects as well as through the advantage of an easy and low-cost access to suitable test persons. During the setup we were faced to several challenges which became obsolete once the LIP was established. Today there is a constant stream of new members, which are “self-recruited” through word-of-mouth recommendations, special user groups can be project specific recruited. After a first cautious interest today our LIP is highly demanded tool within our research and development department and other strategic business units of the company. The more activities take place the more grows the knowledge about the LIP members and the easier and faster it becomes to find the best participants for an individual study. Complex search and procurement activities per project with changing service providers can be reduced. Furthermore, once established the presence of the panel itself may increase the awareness of the need for customer integration.

Traditional access panels apply screeners in order to recruit panellists and participants ad hoc before each study. In addition to this panellist in our LIP are qualified (e.g. with respect to outstanding qualification in areas like entrepreneurship or gaming or their interest in premium TV services) post hoc after each study according to their

contributions. Since the database is continuously refined according to new demands and the data quality grows with each study we call it a recursive or *learning panel*.

Originally panels have been designed for longitudinal studies, to collect data on identical variables at different point in time. Within our LIP the historical perspective is on the participants instead of the variables, since we consider panellists as learning individuals and, in the long run, educated co-developers. For instance we track the number of studies each panellist participated in gaining his familiarity with innovation projects as a qualifying measure for subsequent sampling.

As a consequence of advanced customer integration by means of a local innovation panel we embrace the blurring of company boundaries respectively the fact that corporate boundaries become a matter of designing *collaborative architectures* within the context of interactive value creation (Reichwald and Piller, 2009) or open innovation. In this perspective we understand the LIP as a loosely coupled, relatively independent subsystem or department of our innovation unit – one essential reason why its management cannot be outsourced completely to a panel provider. Accordingly, in addition to methods of traditional market research, methods of human resource management (like personnel selection methods or training on the “job”) are applied in order to manage the panel. To put it another way: Our chief panel manager is head of a department of *a thousand part time employees* that need to be motivated, managed and incentivized in a similar vein like the other valuable, creative employees that we deal with every day.

REFERENCES

Alam, I. (2006). Removing the fuzziness from the fuzzy front-end of service innovations through customer interactions. *Industrial Marketing Management*, 35(4), 468-480.

Bernoff, J. and Li, Ch (2008). Harnessing the Power of the Oh-So-Social Web. *MIT Sloan Management Review*, 49 Spring, 36–42.

Bartl, M.; Ernst, H. and Füller, J. (2004). Community based Innovation – eine Methode zur Einbindung von Online Communities in den Innovationsprozess. In: Herstatt, Cornelius and Sander, Jan G. (ed.): *Produktentwicklungen mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren*. Wiesbaden: Gabler.

Breuer, H. (1998). Technische Innovation und Altern – Leitbilder und Innovationsstile bei der Entwicklung neuer Informations- und Kommunikationstechnologien für eine alternde Menschheit. (Technological Innovation and Aging). WZB-Papers FS II 98-108. Wissenschaftszentrum Berlin für Sozialforschung, pp.1-80.

Breuer, H.; Wogatzky, M. and Steinhoff, F. (2009). User clinic formats and their value contribution to innovation projects. Conference proceeding: The 2nd International Society for Professional Innovation Management (ISPIM) Innovation Symposium, New York.

Brockhoff, K. (2003). Customers' perspectives of involvement in new product development. *International Journal of Technology Management*, 26(5/6), 464–481.

Dahlander, L. and Magnusson, M. G. (2005). Relationships between open source software companies and communities: Observations from Nordic firms. *Research Policy*, 34, 481–493.

- Dahlander, L. and Magnusson, M. G. (2008). How do Firms Make Use of Open Source Communities? *Long Range Planning*, 41, 624–649.
- Di Gangi, P. M. and Wasko, M. (2009). Steal my idea! Organizational adoption of user innovations from a user innovation community. A case study of Dell IdeaStorm. *Decision Support System*, 48, 303–312.
- Di Maria, E. and Finotto, V. (2008). Communities of Consumption and Made in Italy. *Industry and Innovation*, 15(2), 179–197.
- Franke, N. and von Hippel, E. (2003). Satisfying heterogeneous user needs via innovation toolkits: the case of Apache security software. *Research Policy*, 32, 1199–1215.
- Franke, N.; von Hippel, E. and Schreier, M. (2005). Finding commercially attractive user innovations. A test of lead user theory. Working Paper. MIT Sloan School of Management. Cambridge, Massachusetts.
- Franke, N. and Shah, S. (2003). How communities support innovative activities: an exploration of assistance and sharing among end-users. *Research Policy*, 32, 157–178.
- Füller, J.; Bartl, M.; Ernst, H. and Mühlbacher, H. (2006). Community based innovation. How to integrate members of virtual communities into new product development. *Electronic Commerce Research Journal*, 6, 57–73.
- Füller, J.; Jawecki, G. and Mühlbacher, H. (2007). Innovation creation by online basketball communities. *Journal of Business Research*, 60, 60–71.
- Gemünden, H. G. (1981). *Innovationsmarketing. Interaktionsbeziehungen zwischen Hersteller und Verwender innovativer Investitionsgüter*, Tübingen.
- Gerpott TJ, (1999). *Strategisches Technologie- und Innovationsmanagement: Eine konzentrierte Einführung*. Stuttgart: Schäffer-Poeschel.
- Grübl, Ch. (2010). Trend im Online-Panel-Markt. *Research and Results*. 2, 18 – 19.
- Gruner, K. E. and Homburg, Ch. (2000). Does customer interaction enhance new product success? *Journal of Business Research*, 49(1), 1–14.
- Hagel, J. and Armstrong, A.G. (1998). *Net Gain – Profit im Netz. Märkte erobern mit virtuellen Communities*. Wiesbaden: Gabler-Verlag.
- Henkel, J. and Sander J. G. (2003). Identifikation innovativer Nutzer in virtuellen Communities. In: Herstatt, C.; Verworn, B.: *Management der frühen Innovationsphasen*. Wiesbaden: Gabler.
- Hienert Ch. (2006). The commercialization of user innovations. the development of the rodeo kayak industry. *R&D Management*, 36(3), 273–293.
- Hillery, G. A. (1955). Definitions of community: Areas of agreement. *Rural Sociology*. 20 (2), 111-123.
- ISO 26362: 2009 (2010). *Access panels in market, opinion and social research - Vocabulary and service requirements*.
- Jeppesen, L. B. (2005). User Toolkits for Innovation. Consumers Support Each Other. *Journal of Product Innovation Management*, Vol. 22, 347–362.

- Jeppesen, L. B. and Molin, M. J. (2003). Consumers as Co-developers. *Learning and Innovation Outside the Firm. Technology Analysis and Strategic Management*, Vol. 15 (3), 363–383.
- Kozinets, R. V. (1998). On Netnography: Initial Reflections on Consumer Research Investigations of Cyberculture. *Advances in Consumer Research*, 25(1), 366-372.
- Kozinets, R. V. (2002). The Field Behind the Screen. Using Netnography for Marketing Research in Online Communities. *Journal of Marketing Research*, 39 February, 61–72.
- Kunz, W. H. and Mangold, M. (2004). Hybride Communities als Treiber des Kundenwertes. In: Herstatt, Cornelius; Sander, Jan G.: *Produktentwicklungen mit virtuellen Communities. Kundenwünsche erfahren und Innovationen realisieren*. Wiesbaden: Gabler-Verlag.
- Lakhani, K. R. and von Hippel, E. (2003). How open source software works: "free" user-to-user assistance. *Research Policy*, 32, 923–943.
- Leimeister, J. M. and Krcmar, H. (2004). Revisiting the virtual community business model. Conference proceeding: The Tenth Americas Conference on Information Systems (AMCIS), 2716-2726. New York.
- Leonard, D. (2002). The Limitations of Listening. *Harvard Business Review*, Vol. 80 (1), 93.
- Lüthje, Ch; Herstatt, C. and von Hippel, E. (2005). User-Innovators and "local" information: The case of mountain biking. *Research Policy*, 34, 951–965.
- Malhotra, N. K. and Birks, D. S. (2007). *Marketing Research. An Applied Approach*. Edingburgh, England: Pearson.
- Ogawa, S. and Piller, F. (2006). Reducing the Risks of New Product Development. *MIT Sloan Management Review*, 47(2), 65–71.
- Pisano, G. P. and Verganti, R. (2008). Which Kind of Collaboration is Right for You? *Harvard Business Review* 12, 78-86.
- Raasch, Ch; Herstatt, C. and Balka, K. (2009). On the open design of tangible goods. *R&D Management*, 39(4), 382–393.
- Rheingold, H. (1993). *Virtual Community – Homesteading on the Electronic Frontier*. Cambridge: The MIT Press.
- Reichwald, R. and Piller, F. (2009). *Interaktive Wertschöpfung. Open Innovation, Individualisierung und neue Formen der Arbeitsteilung*. 2nd edition. Wiesbaden: Gabler-Verlag.
- Reidenbach, R. E. and Grimes, S. (1984). How Concept Knowledge Affects Concept Evaluation. *Journal of Product Innovation Management*, 1(4), 255-266.
- Rohrbeck, R.; Steinhoff, F. and Perder, F. (2008). Virtual Customer Integration in the Innovation Process: Evaluation of the Web Platforms of Multinational Enterprises: PICMET Proceeding, Cape Town, South Africa.
- Sawhney, M. and Prandelli, E. (2000). Communities of Creation: Managing distributed innovation in turbulent markets. *California Management Review*, 42(4), 24–54.

- Shawney, M.; Prandelli, E. and Verona, G. (2003). The Power of Innomediation. MIT Sloan Management Review, 44 winter, 77–82.
- Sawhney, M.; Verona, G. and Prandelli, E. (2005). Collaboration to create: the internet as a platform for customer engagement in product innovation. Journal of Interactive Marketing, 19(4), 4–17.
- Steinhoff, F. and Breuer, H. (2009). Customer-centric Open R&D and Innovation in the Telecommunication Industry. Proceedings of 16th International Product Development Management Conference (IPDMC), Enschede / Holland, 1-14.
- Stuermer, M.; Spaeth, S. and von Krogh, G. (2009). Extending private-collective innovation: a case study. R&D Management, 39(2), 170–191.
- Surowiecki, J. (2004). The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations. Little, Brown.
- Thomke, S. and von Hippel, E. (2002). Customers as Innovators. Harvard Business Review, April, 74–81.
- Trommsdorff, V. and Steinhoff, F. (2007). Innovationsmarketing. München: Vahlen.
- van Oost, E.; Verhaegh, S. and Oudshoorn, N. (2009). From Innovation Community to Community Innovation. User-initiated Innovation in Wirelss Leiden. Science, Technology and Human Values, 34(2), 182–205.
- Verona, G.; Prandelli, E. and Sawhney, M. (2006). Innovation and Virtual Environments: Towards Virtual Knowledge Brokers. Organization Studies, 27(6), 765–788.
- Verworn, B. and Herstatt, C. (2002). The innovation process: an introduction to process models. Working Paper No. 12. Technical University of Hamburg.
- von Hippel, E. (1978). A customer-active paradigm for industrial product idea generation. Research Policy, 7, 240–266.
- von Hippel, E. (1986). Lead-users: A Source of Novel Product Concepts. Management Science, 32(7), 791-805.
- von Hippel, E. (2001). Innovation by User Communities. Learning from Open-Source Software. MIT Sloan Management Review, 42, 82 - 86.
- von Hippel, E. and Katz, R. (2002). Shifting Innovation to Users via Toolkits. Management Science, 48, 821–833.
- von Hippel, E. and von Krogh, G. (2003). Open Source Software and the "Private-Collective" Innovation Model: Issues for Organization Science. Organization Science, 14, 209 - 223.
- Ziv, N. D. (2008). An Exploration on Community-Based Innovation: Indaba Music as a Case in Point. Conference proceeding: PICMET Proceeding. Cape Town, South Africa.