Customer-Centric Open R&D and Innovation in the Telecommunication Industry

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Abstract

It is widely acknowledged that users are important actors in innovation projects: the market success of new products and services depends highly on addressing customer requirements without overloading them with too many new features and technologies (Lettl/Gemünden 2005; Mason/Harris 2005). Going beyond traditional market research and integrating customers intensively into the innovation process is suggested to be an important measure to market-oriented innovation management (Ernst 2002; Iansiti/Clark 1994). This paper describes a customer-centric open R&D and innovation concept called user-driven innovation, and how it is applied within a multi-national telecommunication company. User-driven innovation is based on customer-and innovation research tools tailored to four innovation phases: exploration (e.g., day-in-the-life visits), ideation (e.g., lead-user workshops), selection/execution (e.g., user clinics) and commercialization (e.g., test market simulation). The application of a variety of these "intelligent" user-driven innovation tools guarantees a phase-specific, integrated customer-centric open innovation approach. This paper will give a methodological overview and examples based on the case study of interactive mobile TV (IMTV).

1. Introduction

The telecommunication sector depends heavily on innovation: New products and services with high degrees of innovativeness turn out to be important sources of sustainable growth (Deloitte 2007; Bitkom 2007). But despite all the exciting technological innovation there remains always the important business relevant question: what do customers want and expect from new product and service offerings? Market uncertainties arise due to inadequate knowledge about the market and the target customers. Finding answers to market-related questions such as, "What are the customer's concrete needs?" presents a major challenge to innovating companies (Rice et al. 2002).

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). Successful innovators use competence within an extended network, which particularly includes the competence of customers (Prahalad/Ramaswamy 2000; Gemünden et al. 1996). In this context, the ability to integrate customers is decisive, but due to increasing complexity a challenging task for organizations. Iansiti and Clark (1994) understand this to mean the ability to allow information about customers and their needs to flow into the process of innovation on the basis of mutual learning processes. In

sum, companies should no longer store their ideas on an inventory shelf because the knowledge will inevitably leak out. Companies that are not using ideas with alacrity but instead remain inwardly focused cultivating a "not-invented here" syndrome, risk missing major and micro trends (Chesbrough/Crowther 2006).

However, capturing and defining customer needs for innovative new products and services is not an easy task. Many of the methods used in traditional market research (e.g., quantitative surveys and forecast models) are insufficient for evaluating the market potential of highly innovative offerings (Trott 2002; Wind/Mahajan 1997). R&D and Innovation Management can nevertheless draw on a number of "intelligent", user-driven innovation tools which produce reliable market information, even in cases where customers find it difficult to envisage the product involved (Rosenthal/Capper 2006). Open R&D and innovation methods that break through the restrictions of traditional approaches and integrate customers intensively into the innovation process make it possible to ascertain the level of acceptance of an innovative product well in advance of its introduction (Ernst 2002; Iansiti/Clark 1994).

This paper introduces a systematic open R&D and innovation approach called user-driven innovation developed and applied by the corporate R&D and innovation centre of a multi-national telecommunication company. User-driven Innovation is based on innovative customer research tools specifically tailored to four innovation phases: exploration, ideation, selection/ execution and commercialisation.

2. Theoretical foundation: Open R&D and innovation

The concept of open innovation has developed at high pace in the recent past. The landscape of economies of scale and fortified R&D centers has evolved into a more unpredictable one characterized by a high degree of market and technological uncertainty requiring less closed but more open innovation business models (Chesbrough 2003a). Taking a look at the terminology the phrase "open innovation" has been used in a wide range of contexts and meanings. Chesbrough's (2003a, p. XXIV) definition focuses on the combination of internal and external ideas to value creating business models and the use of internal and external channels to market. This 'openness' to the multiple sources of origin distinguishes the open innovation model from others such as user innovation which concentrated on the source or root of the idea opposed to its transferability and integration with a company's capabilities (West/Gallagher 2006). The full potential of open innovation calls for two key elements. The first is to combine internal and external knowledge to improve innovations, and the second is to bring monetary value to technical knowledge (van der Meer 2007).

The basic principles of open innovation are intersectoral, applied by both high-technology companies as well as the chemical, thermoplastics and lubricants industries. (Lichtenthaler 2008b; Chesbrough/Crowther 2006). A company's compatibility with open innovation can be gauged by a specific set of criteria; these include being part of a global industry, the technological intensity of the company's main products, the degree of technological fusion related to main products, the newness of the business model, and knowledge leveraging (Gassmann 2006) – criteria which are very dominant in the telecommunication industry.

One of the key motivations behind using open innovation as mechanism to advance technologies lies in its ability to bring short term financial interests and long term innovation requirements together (De Wit et al. 2007). Companies have made cuts to their spending on research for radical innovation and are trying to find strategies which enable them to obtain research results also with limited investments (Chesbrough/Crowther 2006). An important

advantage of open innovation emerges in its screening process. While both open and closed innovation activities try to week out false positives (bad ideas which initially seem promising), open innovation is unique in its ability to reel in false negatives (good projects given up prematurely) from external sources (Chesbrough 2003b; Eliashberg et al. 1997). Furthermore, open innovation provides a mechanism for companies to keep "failures" (projects which no longer receive internal funding) on a close leash: the company can choose to expose the failures to gain external perspective on the project potential, out-license the project to other companies, and facilitating an external spin-off venture (Lichtenthaler 2008a; Chesbrough 2004).

Incorporating knowledge from externals demands real collaboration between internal and external R&D and innovation competences. In order to motivate others to contribute their findings companies using open innovation have to provide intrinsic rewards and some instrumentality for a structured way of contribution (Braun/Herstatt 2006; Prügl/Schreier 2006). Furthermore, for incorporating purposes the company has to pay attention to proper integration of those new ideas with their internal capabilities (West/Gallagher 2006). By increasing the number of participants involved, open activities heighten the degree of complexity within the management of innovation and thus create new challenges in management processes that extend beyond the boundaries of the firm (Erner et al. 2008; Chesbrough/Appleyard 2007; Chesbrough et al. 2006).

Open innovation activities can be characterized as either inbound or outbound based on the direction in which they steer information flow (Lichtenthaler 2008b). One focus of inbound activities is that of user innovation. User innovation has been discussed widely in the context of the lead user paradigm (Urban/von Hippel 1988; von Hippel 1986), and also has been identified as one of the research streams contributing to open innovation (Gassmann 2006; Chesbrough 2003a). While the integration of users into the process of new product development has been acknowledged for its importance, companies applying open innovation also have to pay attention to the consequences these activities have. One important question related to the role of users in open innovation concerns their ability to contribute to different degrees of innovativeness. A series of case studies revealed that some innovative users moved beyond incremental contributions and were able to make radical innovations. These innovative users differed in their characteristics from the original lead user concept, although they shared much in common too (Lettl et al. 2006). Therefore the full potential of customer-centered open innovation can only be truly exploited if a company has the skills to determine the profoundness of user generated ideas, to differentiate between normal (lead) users and the set of users who are able to foster radical innovation, and has the absorptive capacity to exploit disruptive inputs (Cohen/Levinthal 1990).

3. User-driven innovation: Methodological overview & case study

3.1 Concept of user-driven innovation

Innovation projects require a comparatively large amount of information about the market (Leifer 1998; Gales/Mansour-Cole 1995). One decisive option to generate information with the objective of reducing market uncertainties consists in carrying out innovation market research and integrating the customer into the innovation process. Customer research potentially covers all phases of the innovation process and can be classified by various descriptive determinants (e.g., primary vs. secondary data, qualitative vs. quantitative

methods etc.; Berekoven et al. 2004). Systematic innovation customer research designed for the broad market should be extended by information related to individual customers (Workman 1993). This ability can be seen as a part of the broader network competence which makes it possible for companies to establish and successfully use relationships to external partners (including customers) within their innovation processes (Gemünden et al. 1996).

However, reducing market uncertainties for innovative new products and services is not an easy task. Traditional market research, like online concept tests/surveys and quantitative forecast models, has proven to be inappropriate for evaluating the market-potential of highly innovative offerings (Hoeffler 2003; Trott 2002). This is mainly due to two shortcomings: (1) traditional methods are too superficial and have a strong tendency to associate with the past. This makes them unsuitable for identifying latent and future customer requirements (Day 2002; Ekström/Karlsson 2001). (2) Traditional approaches focus on evaluating solutions, and implicitly assume that target customers already have sufficient knowledge of the products in question (Deszca et al. 1999). However, we can assume that target customers are often not as yet sufficiently well-informed to offer a valid assessment of specific functions and preferences in an ad hoc manner. There is a risk (often referred to as the "risk of incrementalism") that respondents could prematurely reject innovative concepts (Christensen/Bower 1996). Bennett and Cooper (1979, p. 78) describe the limits of traditional market research very illustratively:

> "Picture the would-be market researcher eighty years ago attempting to gauge market reaction to a proposed new product, the automobile. Respondents to any questionnaire would have assured the market-oriented innovator that cars would frighten horses, make too much noise, run too fast, and be generally unreliable. The competition of that time, the horse, would be judged just too strong for a successful market entry."

Some authors even claim "to ignore the customers" in discontinuous innovation projects (Martin 1995, p. 83). Argumentation refers to the thesis that customers are mentally bound to (product) functions they already know (so called "functional fixedness"; Ulwick 2002, p. 92)

However, any decision to completely avoid customer research would have serious consequences: there is a substantial risk of bypassing customer requirements in the development process. There is plenty of empirical evidence for this effect in the high flop rates of otherwise excellent and highly innovative new products (Beverland et al. 2006; GfK 2006). Customer orientation represents one of the strongest innovation success factors (Trommsdorf/Steinhoff 2007; Steinhoff 2006; Henard/Szymanski 2001). It can be concluded that there is a strong need for intelligent, user-driven innovation tools.

Product innovation research can draw on a number of "intelligent" open R&D and innovation methods which produce reliable market information, even in cases where customers find it difficult to envisage the product involved. Methods that break through the restrictions of traditional approaches make it possible to ascertain the level of acceptance of an innovative product well in advance of its introduction (Rosenthal/Capper 2006).

Figure 1. contains a general overview of user-driven innovation tools used at the corporate R&D and innovation centre of a multi-national telecommunication company. There are many models for the process of innovation, which vary in the terminology used, by the number of process phases and by the diversity of the structuring and presumptions about activities being sequential or in parallel. Generically, and thus largely independently of the sector or situation, one can discriminate between the phases exploration, idea generation, selection/execution and commercialization (Trommsdorff/Steinhoff 2007; Verworn/Herstatt 2002; Gerpott 1999).

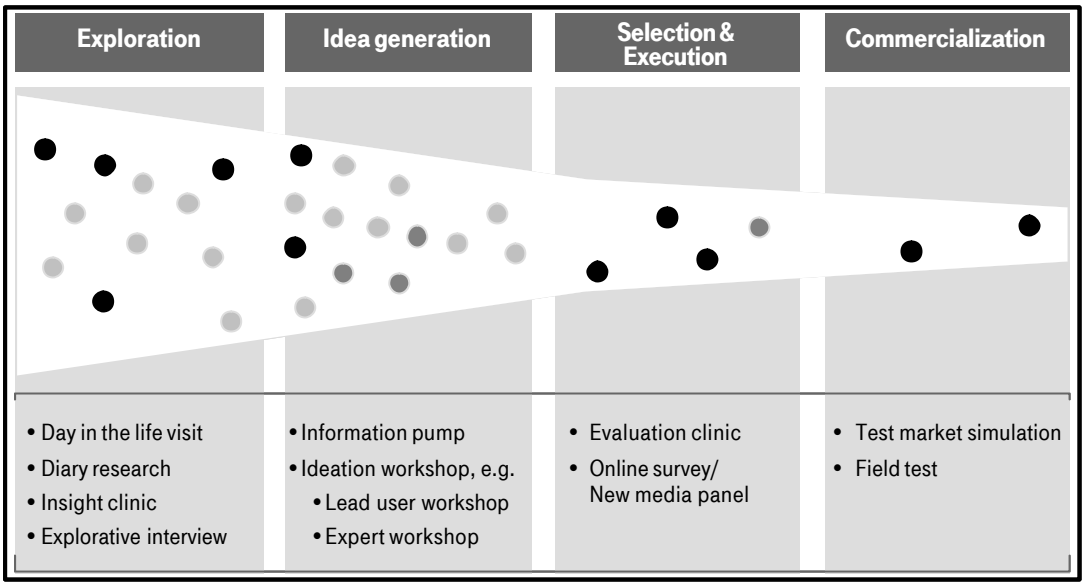

Figure 1: Phase-specific concept of user-driven innovation

The following chapter sections will elaborate in detail on the phase-specific user-driven innovation tools.

3.2 Phase-specific implementation of user-driven innovation

First phase: Exploration

The exploration phase refers to the initial fuzzy front end of an innovation project, at least a multiplication of options. 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 (Trommsdorff/Steinhoff 2007; Verworn/Herstatt 2002; Gerpott 1999). The desirable results of this innovation phase are so-called customer insights, vivid descriptions of unsolved problems or unmet needs, presented from the customer's own perspective, their perception of, their beliefs about, and their feelings toward the problem.

Naturally, the question arises as to how exactly one can get people to reveal their needs and wants in the context of innovations. A spontaneous answer to that question might be: "Just ask them". While that simple method will work for a lot of incremental innovations it will most probably not do the job when aiming at discontinuous or radical innovations (Trott 2002).

The concept of user-driven innovation contains a number of methods which are especially suitable for the early phase of exploration when trying to reveal latent (implicit, unknown) problems, needs, and wants. An integral part of so called *day-in-the-life visits* is the concept of personal visits to (potential) customers. The customer is observed during his or her daily routine and interviewed whenever deemed necessary. These visits are usually conducted by small cross-functional teams. Depending on the branch of business, these teams may consist of market researchers, psychologists, product/marketing managers and/or engineers, etc. During and after the direct interaction with the customer, a vivid documentation of, for example, the ICT-infrastructure and the usage patterns of the person in question is drawn up,

thus creating a picture of the “user in the box” (e.g., Leonard/Rayport 1995; Mrazek et al. 1995). Another very interesting research method especially suitable for the phase of exploration is *diary research*. Target groups (e.g., lead-users) are asked to keep topic-specific (online) diaries over a predefined period of time. The diaries in question are pre-structured according to the questions the researcher is interested in. They can, for example, focus on latent needs/wants, usability requirements or drivers and barriers of a product or service innovation (e.g., Samli 1996).

An origin of *insight clinics* is the car clinic used in the auto industry. The name of this method metaphorically quotes diagnosis, putting concepts and material to their paces. Test persons” become doctors at a special location, The test targets are treated as "outpatients", as if visiting a medical clinic (Kunkel 2006; Burmann 1994). And since cars are costly to mass-produce tangible prototypes are on the operating table.

The car clinic method can be adapted for other sectors (Ozer 1999). In the case of insight clinics, direct personal interaction is realized along different “insight stations”. This can include current product and services and/or visualizations of possible future usage scenarios. The particular insight clinic can be designed topic-specifically: It can, for example, concentrate on product/service confrontation to identify barriers, group discussions to identify latent needs or also imply the identification of means-end-chains via a laddering technique (Braunstein et al. 2000). Furthermore, the execution of *exploratory interviews* also allows for the identification of latent needs and barriers. An example of a technique deployed during an interview is introduction and prioritization of future usage functionalities (so called mini concepts; Durgee et al. 1998).

Second phase: Ideation

Idea generation relates to the search for ideas for innovations as well as any initial pre-selection (Trommsdorff/Steinhoff 2007). For market pull innovations, demand presents the starting point for innovation, while technology push innovations are initiated by technical ideas or inventions, which then result in a search for an application (Chidamber/Kon 1994). Creativity is required, which can be supported by creativity techniques, whereby apart from internal sources especially external sources such as customers come into question.

The user-driven innovation concept provides a number of methods to facilitate the search for, and the pre-selection of, new ideas to be used in the second phase of the innovation process, the idea generation. The so called *information pump* approach is based on the results of game theory research conducted at the Massachusetts Institute of Technology (MIT; Dahan/Hauser 2002). It is essentially a web-based discussion forum similar to the well established delphi-method. Participants articulate their ideas for future products and services. The ideas are then evaluated in a second round by the other participants (Müller 1997). During subsequent *ideation workshops*, creativity techniques such as trend cards, learning from other brands and building the future world via Lego bricks are employed in order to elicit creative input. In other words, the intention is to perform a deep dive into the creative potential of the participants and to develop idealized designs (Magidson 2004). Ideation workshop participants can either be experts or lead-users (Lüthje/Herstatt 2004) with regards to the topic of the workshop - or a combination of both. Lead-user workshops generate information about the needs of visionary customers at an early point in time (von Hippel 1986).

Third phase: Selection/Execution

In the third innovation 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. To assess the commercial feasibility, particular care must be taken to see if and when the innovation will be accepted by the target customers (Ram/Sheth 1989). The investment decision comes at the end of this phase; whether to pursue the idea further or to cancel the initiative. This decision is usually based on a business plan or on a well formulated concept. In the execution phase, the emphasis is on development activities, which are generally dominated by the production and test of prototypes. Iterative and parallel alternative paths are frequently pursued in order to solve a technical problem (Gruner/Homburg 2000).

The use of so called *evaluation clinics* enables the testing of the match between new service/product concepts and prototypes and the needs of different customer segments at later stages (Burmann 1994). Evaluation clinics can yield information about a variety of areas such as product use, understanding customer preferences in detail, product modifications and learning behavior. Data collection can be based on observations, questionnaires, in-depth interviews, and/or group discussion. Depending on the readiness for production, differing presentation concepts of products and services can be integrated into a user clinic: use cases, visualizations, mock-ups, prototypes up to final products. The general idea is that preference measurement for innovative new products and services needs a precedent intense learning phase. The differentiating aspect of evaluation clinics compared to traditional market research methods lies in the separation between an intense learning phase (vivid presentation and explanation of new service ideas) and a subsequent preference measurement (e.g., via conjoint analysis; Dahan/Hauser 2002). Depending on the readiness for production, differing presentation concepts for products and services can be integrated into an evaluation clinic: use cases, visualizations, mock-ups, prototypes up to final products.

In the case of an *online survey* based on the *a new media panel* (panel respondents who have sufficient knowledge about New Media innovations like IPTV and mobile TV) product concepts or prototypes are represented online by their features. A web-based conjoint analysis is carried out in order to obtain valid and reliable information about the prioritization of products and service functions from the (potential) customer's point of view. Service or product ideas that have been found to be highly attractive can also be subject to a deeper analysis (e.g., usability specification analysis/testing, pricing models etc.).

Fourth phase: Commercialization

Even in the later stages of the innovation process, the introduction of the innovation to the market, a lot of mistakes can be made that may result in enormous and costly disappointments. 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 (Trommsdorff/Steinhoff 2007). During the introduction, the marketing mix must be implemented by referring to the strategy followed with the innovation. Communication takes a particularly prominent role here. Only when the product advantages are perceived by the target customers and are understood as beneficial, can the innovation succeed in the market (Rogers 2003).

The user-driven innovation toolbox contains specific methods for the commercialization phase which can help to avoid making such mistakes. Depending on the readiness for

production, one of the following might be the method of choice. During *test market simulation* in laboratories and/or virtual environments participants are able to gain experience in the usage of products and services and can then state purchase intentions (Jeppesen 2005). Furthermore, an innovation can be introduced into a *real test market*. The continuum of possible field tests expands from market testing with selected users only up to local market introduction. The testing criteria may be benefits, usability, bugs and the like (Trommsdorff/Steinhoff 2007).

3.2 Case study: Interactive Mobile TV

Mobile telecommunication providers want to offer their customers a mobile TV experience to enhance customer loyalty. Mobile TV is regarded as a key service and as a market differentiator for future revenue generation (Seong 2008; Barrett 2006). Mobile TV is accelerating the trend towards dissolving the passive linear TV experience by focusing on a more non-linear TV viewer experience, enabling more customer interactivity and a broad spectrum of user-generated content. The levels of interaction with the system and with other viewers or communities are enlarged considerably by new, innovative technologies. It goes beyond more simple interaction scenarios, such as live user voting in a broadcast program. Full-scale interaction between the TV consumers themselves becomes possible; interaction within a community during a TV broadcast. So-called interactive mobile TV (IMTV) enables new, interactive, rich media services on mobile phones. In sum, there is huge potential for live mobile TV, program-related interactive services on mobile phones, such as interactive TV shows, interactive games, advertising, blogging, and shopping (Orgad 2006).

Capturing and defining customer needs is not an easy task, especially for an IMTV world, as outlined above. This is because IMTV involves a high level of innovation, not only from the technological point of view, but also from the market's perspective. IMTV innovations need to be seen not only in the light of those factors which promote its adoption, but also - and especially - in those which tend to inhibit it (Rogers 2003; Ram/Sheth 1989). Although future IMTV applications generally have the tremendous potential to offer a new type of customer service ("a new mobile television experience"), at the same time they also demand considerable behavioral changes from those target customers. The required learning processes entail significant investment in terms of cognition, time, and money. For target customers, this represents a huge hurdle on the road to adoption.

Such barriers to adoption not only have an influence on the buying decision, but also represent a considerable degree of market uncertainty for the innovating company. Mobile TV service providers need to ask themselves questions such as: "Which prospective customers actually have a need for interactive lean-forward applications? What do different TV customer segments actually want in terms of interactive services? What are the product advantages of IMTV versus traditional (mobile) television that should be highlighted in the communication process? How much are prospective customers willing to pay for IMTV services?"

By focusing on notions of interaction which, for the most part, are currently the preserve of TV experts, IMTV projects do not address requirements that have already been articulated by customers, but unconscious and potential future customer needs. Furthermore, it can be assumed that target customers are not, as yet, sufficiently well-informed to be able to offer a valid assessment of specific IMTV functions and preference in an ad hoc manner. From this, one can conclude that using traditional market research methods such as standardized surveys

(including naive questions on public acceptance such as: "Would you buy this, if ....") would produce inaccurate forecasts. Thus, the open R&D and innovation concept of user-driven innovation was applied by the R&D and innovation centre of a major multinational telecommunication company.

First, in the IMTV *exploration phase* a diary research was carried out in order to gain customer insights on the topic of IMTV. Participants of earlier research projects in the user-driven innovation project field served as the basis for lead-user identification. Furthermore, respondents' attitude towards innovation and new technology as well as their attitude towards mobile TV determined selection. To begin with, participants were invited to briefing sessions in order to introduce them to the concept of mobile TV. The main goal of this introduction was to set the mental focus of the participants not only on content questions but rather on the research topic - namely interactivity in Mobile TV. Two mobile devices were presented to them with preinstalled interactive quiz formats to give an impression of possible formats. Participants were then given the diary package consisting of the actual paper-based diary in the form of a little book and a voice recorder. A first chapter in the book gave an overview of the diary structure with detailed explanations on where and how to record the thoughts and requirements as well as instructions for the voice recorder. Each of the predefined areas of application (entertainment, commerce, communication, and information) was explained and visualized with corresponding examples. The remaining pages were provided for participants' entries. During the 10-day diary phase participants were regularly contacted to assure constant project awareness. They were given trigger-information and regular tips via SMS and email as to what areas could be of interest for interactive services. This way, potential ideas could be triggered in contexts participants had possibly not yet thought of. The respondents posted more than 400 statements regarding needs and wants, requirements and potential barriers to adoption.

Subsequent to the diary research described above the participants were invited to take part in two one-day lead-user workshops for *ideation* on the development of innovative services and products in the context of IMTV. In order to trigger segment-specific ideas, the original group of diary participants was separated into two independent workshop groups: "commuters" and "young and technology-affine people". After a brief introduction of the participants, the workshop's approach, and goal, a variety of creativity techniques was applied. In order to secure a less tense and therefore more open-minded and creative atmosphere, a Lego bricks game was chosen to start off the actual workshop. Participants were asked to build future mobile TV scenarios. Communication between the participants was encouraged and first results in the form of usage scenarios in a wide variety of contexts (e.g., while riding the subway, during outdoor activities) were achieved. Another tool used in order to enhance creativity was the so-called character puppets method. These are puppets that represent specific target groups in a stereotyped way. Examples of these character puppets are "young conservatives" or "seniors with need for comfort". Participants were asked to think of possible IMTV services or products each of the puppets might already use or may otherwise be interested in. The benefit of this activity is the change of perspective which leads to new ideas. Additionally, it opens up the possibility to state ideas that one may be uncomfortable with - simply by attributing it to another person. Furthermore, constant triggering information such as short movies on future trends was provided throughout the workshop. Ideas with sufficient analogy were combined into use cases. At the end of the workshop, participants were asked to evaluate the 57 use cases developed during the workshops, in terms of benefit and effort expectancy, and to name their favorites. They were asked to state the reasons for their judgments in order to check consistency.

A series of evaluation clinics with potential mobile TV users was conducted in the *selection/execution phase* to gather empirical data on preferences for new IMTV services. Using existing customer segmentation, 36 participants were recruited for each one of five relevant customer segments to ensure an appropriate audience for preference measurement (in sum n=180). To begin with, participants underwent an intense learning phase during which IMTV services were vividly explained using visualizations and demonstrators. Prior to every module (e.g., mobile entertainment) an introduction was given and demo-handhelds were integrated to illustrate the service ideas. To clarify features of services and offers, hand-outs were given to respondents after the presentation of features on flip-charts. Afterwards, participants were asked to answer questions about the IMTV services they had just been introduced to. The questions were programmed as an online survey and participants had laptops at their disposal. On the basis of these questions, an Adaptive Conjoint Analysis (ACA) and a Choice-Based-Conjoint (CBC) were conducted to gain insight into the participants' benefit perception of separate attributes of the services described. To adjust roadmap prioritizations, three strategic adopter groups were defined (innovators or early adopters, majority and laggards; see Rogers 2003). Based on the adopter-specific preferences, short-term, mid-term and long-term roadmaps were derived, and customer price sensitivity was measured.

In the *commercialization phase* the next step will be the introduction of selected services to a mini test-market in Berlin. Experience has shown that insights gained through new product research in other countries (e.g., USA, UK, Japan) cannot be easily extrapolated to the German market (Breuer 2009). Results concerning benefits, price sensitivities and adoption probabilities will have a higher validity and reliability for the German market and will reduce the probability of innovation failure. The basis of the IMTV field test will be a user innovation panel consisting of 1000 active panelists located in Berlin. In sum, compared to the "traditional" TV world, the effort to build a convincing next generation IMTV value proposition is much greater. This requires a careful analysis of customer needs and their adoption rate of new services in terms of an open R&D and innovation strategy and an efficient organization of the whole value chain for service orchestration and fulfillment.

4. Conclusion

The active use of customer competence via the integration of customers is an essential characteristic of customer-oriented innovation processes (Steinhoff 2006; Lüthje 2002; Breuer 1998). Customer orientation is a critical factor, both for the success of the company (Singh/Ranchhod 2004) as well as for the success of the new product (Kahn 2001). Despite this, a lack of customer orientation continues to be a frequent phenomenon in the process of innovation (Mason/Harris 2005; Ekström/Karlsson 2001).

Overcoming the bottleneck factor of customer orientation translates into the need for information. Both the generation of information by innovation market research, as well as the integration of customers in the process of innovation, serves to reduce uncertainty about the market (McDermott 1999). This ability can be seen as a part of broader network competence which makes it possible for companies to establish and successfully use relationships to external partners (including customers) within their innovation processes.

By concentrating as early as possible on the product functions most preferred by the target customer, the duration and costs of the product development process can be lowered. By meeting the customer's needs as optimally as possible, the diffusion process (Rogers 2003)

can be influenced positively. Market information enables initial estimates to be made of the potential market, reducing incorrect innovation investment decisions. The concept of user-driven innovation as applied at the R&D and innovation centre of a multinational telecommunication company offers a systematic approach for customer-centric open R&D and innovation.

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