

Community Based Innovation A Method to Utilize the Innovative Potential of Online Communities*

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Abstract

In this article the authors suggest a method to utilize the existing innovative potential of online communities by integrating its members virtually into New Product Development. The introduced concept of Community Based Innovation (CBI) which is founded on groundwork of social exchange and interaction theory was explored, tested and refined in several already conducted business projects in the consumer goods sector. As result of this action research the authors illustrate CBI as a practitioner's guideline consisting of four systemized steps along one case study in the automotive industry. The presented study helps to get a deeper understanding and a more detailed overview concerning the procedures and activities used in practice.

1. Innovative Potential of Online Communities

A popular example where the Internet is changing the scale to shift the locus of innovation to selected user groups can be found in the open software development where self organized user groups are able to create software applications superior to other commercialized products [54]. The lessons learned from open source development can be transferred to other existing innovative user communities of physical products as well [50, 51, 53]. Analyzing four different sports communities Franke and Shah [21] showed that averagely one third of the community members improve or even design their own product innovations for sports equipment. Moreover, these members are well informed regarding the innovative activities of

* An extended version of this article including additional practical applications of the Community Based Innovation method is available by contacting the authors.

other community members. Another popular example of a highly innovative online community is the “Harley-Owners-Group” (<http://www.hog.com>). Concepts of individualized motorbikes and accessories demonstrated and discussed within this community were later included in the development process of the producer Harley-Davidson [38].

Virtual interest groups differ in structure and extensity of social ties and are often termed online or virtual communities, communities of interest, communities of consumption, virtual settlements or brand communities [3, 31, 36, 41, 45]. They are mainly based upon shared enthusiasm and knowledge concerning specific product domains and are often virtual meeting place for innovative users to discuss opportunities and ideas for new products and their improvement [32]. Members of communities of consumption seem to be particularly suitable for the virtual participation in new product development (NPD) because of their high product interest and knowledge as well as presence on the Net [32, 38, 47]. To set up an interaction process with these communities it is necessary to consider the particular characteristics of the community like language, netiquette and norms as well as the individual motivation of the community members to share their knowledge and ideas [3, 10, 59].

In the following section we will examine the opportunities of integrating members of online communities throughout an idealized three stage innovation process. The first stage of *Idea Generation and Concepts* is focused on the identification and generation of opportunities, fresh ideas and novel concepts. External resources for this process stage are e.g. inventors, lead users, designers, engineers, other innovative community members or heavy users. These contributions can be added to internally created suggestions of the company’s innovation team. The entire collection of ideas and concepts has than to be evaluated and refined in the following stages. As an example Peugeot initiated an internet-based design contest where nearly 2800 design enthusiasts from 90 countries were registered with their proposed car designs on the theme of “Retrofuturism” (<http://www.peugeot-avenue.com>). In this early stage of the innovation process the integrated community members take the role as source of ideas [34, 42].

Within the *Design and Engineering* stage the term co-creator [34, 42] or co-designer [44] describes the role of the integrated community members more accurately. Dahan and Hauser [16] introduced six web-based methods that allow the participation of internet users in a much more active and in depth way than existing market research methods. The method of User Design for example allows the users to design their

own products according to their wants and needs. Design and feature options, engineering constraints and price impacts are displayed in real-time while using a web-based drag-and drop option to create the ideal product. Von Hippel follows a related research direction with the introduced interactive toolkits that give customers the capability for trial-and-error learning by doing as changes including price, performance and appearance of virtual prototypes are immediately visible on the screen and can be adjusted to personal preferences [55, 58]. The novelty of these approaches compared to conventional online market research is that users are not only asked about their opinions, wants and needs but also about their creativity and problem solving skills. They are asked to contribute to tasks like generate and evaluate new product ideas, elaborate a detailed product concept, evaluate or challenge it, discuss and improve optional solution details, select or individualize the preferred virtual prototype, test and experience the new product features by running simulations, get information about the new product or just consume it. Members of online communities characterized by high product and situational involvement as well as enthusiasm, represent an ideal resource to be confronted with these new methods for co-designing products.

In the *Test and Launch* stage of the idealized innovation process the producer may interpret the role of the community members as end users or buyers [34, 42]. So did Volvo with their internet-based platform where they presented different concept cars, e.g. in the adventure or performance sector, as possible future offerings (<http://www.conceptlabvolvo.com>). The visitors playfully familiarize with these car concepts and give their feedback after virtual presentations and test simulations. Other opportunities to integrate online communities in a testing and market-forecasting stage are recently developed methods like internet-based virtual stock markets [16, 49] or experimental markets for product concepts [11].

At the end of this section we can state that the innovative potential of online communities can be utilized throughout all stages of the innovation process. By integrating selected community members more than once or iteratively in different stages these users may even get the status of development advisors what strengthens the idea of collective invention and trust building [44]. I.e. Procter and Gamble installed a P&G Advisory Community where users became the chance to participate in designing, testing and launching new products. Under the category “Share your thoughts” on the P&G Homepage the community visitors are able to obtain the status of an R&D advisor by providing contributions to different development categories.

Furthermore there is the opportunity to share patent ideas with the P&G innovation team.

Following we will introduce a systematic method of realising Community Based Innovation (CBI). This method is then applied and described in detail with the help of one case study. We will conclude with evaluative remarks of the method and recommendations for further research activities.

2. Realizing Community Based Innovation

To answer the question of how online communities and their members can be incorporated in the innovation process the authors suggest a four-step process for CBI. These four steps are part of a logical course of action which resulted from the discussion with marketing and R&D experts and the experiences gained in several real-business projects. The method deals with the following key questions:

- (1) Determination of User Indicators: *Which attributes should the users have to be able to support the innovating company in the development task it is challenged with?*
- (2) Community Identification: *Within which online community these users can most probably be found?*
- (3) Virtual Interaction Design: *How the interaction with these users can be designed efficiently regarding the particular development task and the individuality of the selected online community?*
- (4) User Access and Participation: *How the community members can be contacted and encouraged to take part in the co-development?*

Before entering step one the producer must be aware that his objectives and expectations regarding the utilization of online communities as an external resource for NPD are formulated and that the development task itself is structured in a manner that one or more clearly defined development (sub) task(s) can be selected and afterwards delegated to the community members [56].

2.1. Determination of User Indicators

Different types of users exist within online communities. They differ in the social ties they keep up within the community and in the level of involvement with the topic or central activity of the community [32]. The so called “tourist” is lacking strong social ties to the group and has a rather small or only contemporary interest in the topic. The “mingler” maintains strong social ties but is not really into the topic. The “devotee” on the contrary is highly involved

with the topic but not very related to the community. The “insider” is strongly associated with the community and highly involved in the topic. As Kozinets [30] points out, preliminary research reveals that devoted, enthusiastic, actively involved, and sophisticated user segments are represented in online communities by insiders and devotees. They demonstrate Lead User characteristics [57] and are highly respected within the community [30]. Hence, they have a strong influence on the meanings and opinions towards innovations. These community members seem especially suited to contribute to NPD as shown by empirical studies regarding the development of product innovations by Lead Users [57, 52]. Lead Users have product or service needs that are ahead of all other user groups in a given market and they additionally possess in depth technical knowledge and a general understanding of product functionalities. Therefore the innovating company could obtain significant benefit from their skills especially in the stage of *Idea Generation and Concepts* and in the stage of *Design and Engineering* whereas representative customers of specific product segments and target groups are better suited for testing activities and sales forecasts. This means that the sought profile of user’s skills, expertise and characteristics depends on the particular development (sub) task(s) which is chosen to be assigned to the community members. The aim is to find the optimal fit between user abilities/characteristics and the transferred task requirements. Next to the Lead User status other personal indicators like innovativeness, creativity and the persons’ cognitive style (e.g. ability of divergent thinking, previous experiences, motivations, attitudes towards new innovations), domain specific knowledge (e.g. product usage, materials, technology or market understanding, already invented products) and the ability to communicate can help to find this optimal fit. In scientific literature these attributes are treated as constructs which are operationalized and measured using different questions the participants can be asked to answer [1, 26, 37, 43]. As an alternative to this classical way of measuring personality traits, other methods like idea contests or virtual stock markets can be used to identify qualified users, e.g. Lead Users [19, 48]. Additionally common segmentation variables in marketing, e.g. geographic, demographic, psychographic or behavioural criteria help to match the profile of the community members with the already known buyer segments.

2.2. Community Identification

The second step of the method concentrates on the identification of online communities where members

with the defined user indicators can most likely be found. Innovating companies often operate communities themselves which can be utilized as potential source of users with the needed characteristics. Examples are the developersvillage of Siemens (<http://www2.siemens.fi/developers.jsp>), womensnet of Henkel (<http://www.womensnet.de>) or the advisory community of Procter and Gamble (<http://www.pg.com>). Another possibility of community identification is to use existing contacts of employees which are often enthusiasts themselves for the products they are dealing with at work on a daily basis. In different business projects, e.g. on running shoes, model railroads and baby carriages it turned out that they were familiar and in close contact with relevant online communities. Another possibility is to apply powerful search engines in the Internet using keywords to identify newsgroups, chats, bulletin boards, email distributors or web portals of topic related magazines, societies and clubs which often offer community functionality and invite visitors to join the discussion and exchange experiences. It is not easy to tell what search strategy and terminology is most effective. One might start with entering the product category or hobby the new product is related to and start e.g. with screening usegroups/newsgroups or topic related internet sites. Therefore, primarily considering a wide variety of options no matter how obvious or abstruse they appear at first sight may lead to interesting and useful internet-based recruiting alternatives. Then a pre-selection of the most relevant online communities and internet locations should be taken along personal impressions, quick evaluation of the exchanged content and the design as well as on information regarding traffic and number of participants interacting with each other. Communities react completely different to external inquiries. Some are pleased to offer their support and looking forward to share their ideas, others show slight concerns and agree to participate only under certain conditions that are assured, while others refuse it completely and feel disturbed [20]. Therefore, it is important to get familiar with the community itself, the individual community members, their exchange behaviour and skill level [3, 10, 59]. If available, the netiquette gives more information of how the community reacts to external inquiries from producers. For a specific project it is best to get in touch with the webmaster asking about her/his opinion and conditions. Is the community administrated by a commercial provider, the producer will be charged for the announcement of the CBI project. Hence, it is important to get an overview on prices and services offered. As the response rates of banners or pop-up windows are often far below one percent, it is more cost efficient to link the price to the

actual number of participants and not as frequently used to page impressions, hit rates or click through rates.

Again it is important to mention that the result of this step of the CBI method is the identification and selection of online communities where users with the wanted indicators are likely to be found. How many of the community members meet the exact indicator profile defined in step one of the method cannot be assessed yet. This can only be done after the participants actually carried out the development (sub) task(s) and answered the questions for measuring their personal traits. However, this screening process is absolutely crucial to reach the "right" customers if it is the first time an innovating company initiates a co-development project with online communities. If the company is already experienced with the virtual integration of members belonging to different communities they can reanimate these members to participate again in the innovation process and fulfill tasks they are best suited for.

2.3. Virtual Interaction Design

General principles for the interaction design can be derived from several theoretical approaches like the *flow concept* that describes a state where participants are totally absorbed in an activity which is rewarding by itself [13, 14, 27]; the *toolkit approach* that describes several principles a user-friendly tool has to fulfill to enable customers to create their own innovations [55, 58]; the *social exchange theory* that demands that the virtual interaction has to be rewarding for both producer and user [2, 4, 8, 17]. Social exchange theory has to be proven especially valuable for the analysis of innovative user behavior within an online community context [25, 29, 33]; and further general *design requirements* a high quality web site has to meet [5, 35]. Additionally to the mentioned principles, the interaction has to consider the insights about user motivations and certain user behaviors gained from the previous online community observation.

That means, the design of the virtual interaction has to be tailored to its participants and to the development (sub) task(s) transferred to them. There is no single best solution for the design of the virtual interaction as it depends on the specific context. Several design parameters may be varied in order to align the virtual interaction with the objectives of users and producers: the intensity of interaction (e.g. number of participants, frequency and duration); the level of multimedia richness (e.g. animations, virtual product presentations); the communication style (e.g.

formal/informal; one- bi- or multi-directional, anonymity of the interacting parties); the offered incentives (e.g. notation as co-inventor, supply of proprietary information, monetary compensation, fun factor, etc.); and the applied tools (e.g. toolkits[55, 58], virtual concept testings [16], virtual stock markets [49], idea competitions or open discussion forums).

It is obvious, that all design requirements stated above are difficult to meet for an often heterogeneous group of participants characterized by different levels of knowledge and abilities. The more central a product or an activity is perceived by users, the higher is her willingness to play an active part [9]. Managers, who believe that customers can be motivated to participate solely because of monetary incentives, like the awarding of bonus points, drawing prizes or even giving shares of the product success, are mistaken in most cases. As the authors observed in conducted projects the intrinsic incentives like the demand for new and better products [39, 53, 57], curiosity and exploratory search behaviour as the desire to learn something new [7, 26, 27], the innovation task itself as an autotelic task [15], the possibility to get exclusive information on innovations, share ideas, get acknowledgment and support the community [10], definitely do have a great impact for motivating users to virtually take part into NPD and were even more important than financial incentives.

We found that in order to utilize the full innovative potential of participants, the virtual interaction platform at large has to allow a realistic judgement of ideas and concepts; provide a stimulating environment that enriches users' creativity; offer community functionality that enables users to work jointly on a problem to create a solution that incorporates more than just the summation of each individuals knowledge [46] and offer an "Innoquette" as clear and transparent regulations of legal aspects concerning exploitation rights of generated ideas and protection of data privacy.

2.4. User Access and Participation

Once online communities are identified for integration and the virtual interaction platform is programmed and tested the members can be accessed and contacted. E-mails, banners, pop-up windows, or short articles can be used to get in touch with the community members and inform them about the part they can play in NPD. Sometimes it is recommendable to contact the selected communities not directly but rather via a trustworthy member of the community or via the webmaster to increase acceptance.

The stimuli selected for the announcement of the project should aim to make community members

aware of the project and animate them for participation. Details about the design for banners or pop-up windows can be found in involvement research for advertisement [40]. During the course of interaction user support has to be provided which should not be underestimated. Participants will ask for help, or will raise specific questions which should be processed promptly. In addition, most participants expect direct feedback on their input respectively show interest for the development status in general. In parallel to the gathered customer input, contributions can be analyzed to get first results and initiate some modification in case the expected quality or quantity of user contributions cannot be met. Is it the first time that community members are integrated virtually into NPD it is useful to get some information about their experiences made with the participation, their willingness to participate again and their expectations regarding further virtual product development projects. In case that the same users have been already integrated more than once, a long-term relationship may emerge. Producers may then consider establishing their own community of innovation.

3. Application

The identified steps proved to be a systematic guideline for carrying out already six business projects in the automotive, sports, furniture, gaming, accessories and child care sector. The results of the empirical application of the CBI method appear to be very promising. As at least one of the authors played an active part or even had the responsibility as project leader, the access to all relevant project information and decision processes was guaranteed. Therefore, no additional questionnaires as data gathering tool were necessary to get input from the innovating company and the participants. The experiences gained by investigating the phenomenon within its real-life context allowed to test and refine the early form of method sequentially in each project. With the chosen action research approach the authors intended to get an basic understanding of the virtual customer integration into NPD as a whole, being aware that our findings may be difficult to generalize [23]. As special form of case study research [60], action research allows to generate theory or methods, but lacks statistical reliability and validity.

To give a deeper understanding and a more detailed overview concerning the procedures and activities used in practice, the CBI method is illustrated along the following case within the automotive industry. The case study focuses on the development of Infotainment systems at the Audi AG. These systems integrate state of the art communication and entertainment

technologies in the domains of audio, video, navigation, telematics and user interfaces to an overall Infotainment system in the car. Several reasons supported the choice of the Audi case for this paper. First, the Infotainment electronics sector is one of the fastest evolving fields in the automotive world at the moment. Therefore, the topic represents very well the chosen research context of innovation processes and the need for the development of superior and customer oriented products to compete in a competitive market. Second, Audi is a very well known car manufacturer that unites admirers and enthusiasts alike to social collectives centred around the Audi brand. Virtual meeting places for this huge brand community are represented in the online world by official Audi Web Pages, non commercial brand sites like Audi clubs, newsgroups and other virtual automobile related communities. Finally, the authors had the possibility to accompany the Audi project called “Virtual Lab” from initiation to project conclusion. This was especially helpful for complete data accessibility and avoidance of interpretation difficulties.

Two main objectives were stated at Audi Infotainment. The project should, (1) deliver information about customer expectations, preferences and upcoming trends in the Infotainment world quickly, cheaply and interactively; (2) give insights concerning customer acceptance, perceptions and input quality of web-based customer integration in NPD in general. The Virtual Lab as a web-based interaction platform (see Figure 1) should help to find satisfying results concerning these two major goals.

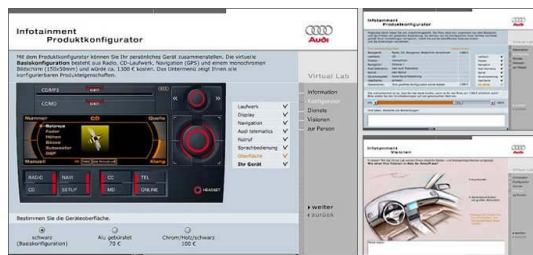


Figure 1. The Virtual Lab

Determination User Indicators

As nearly every driver regularly listens to the car radio, to CCs or to CDs which are basically low end Infotainment systems, the potential group of Infotainment users to be integrated is rather huge. The familiarity with these devices makes development tasks more accessible and the co-design less complex to customers, at least in comparison to other car components like engine, gear or transmission. For this reason, no additional technological in depth knowledge was required to take part in the Virtual Lab and a large number of potential participants, i.e. car drivers in

general, could be expected. According to the Lead User concept users of similar applications in advanced analog markets seemed to be a suitable source to contribute their knowledge and experiences as well, especially for outlining Infotainment visions. Related products and applications can be found e.g. in the telecommunication and entertainment industry like mobile phones, mobile services, PDAs and HIFI systems. To sum it up, different user groups were taken into account to contribute to the producer-user collaboration for the development of Infotainment systems. Lead users seem to provide valuable inspirations for the creation of Infotainment visions of the future. Early adopters of high-end Infotainment systems including functionalities like navigation, telematics and voice control were assumed to give valuable input for creating promising variations of virtual product concepts and evaluating the recently launched telematics offerings. Heavy users in the low-end segment would give insights in weaknesses of the current product performance as a starting point of system improvements relevant for the next generation systems.

Community Identification

The Virtual Lab included different development tasks emphasizing different attributes of user groups simultaneously. Consequently no single user group was excluded for participation in the beginning. Instead different questions referring to lead user attributes, diffusion models, involvement constructs and demographic facts were included as filter for the categorization of the participants. The Audi Homepage was used as the online setting where all different user types mentioned in the previous step should be found. The Audi brand image as an innovative company, the recently introduced and highly awarded Infotainment system in the upper class sector and the huge number of monthly site visitors which personal profiles were partly known already are aspects that supported the assumption that innovative users as well as normal users, i.e. buyers, could be found at the Homepage centred on the brand. Furthermore, users who intend to buy a new car might simply visit the official site of the car manufacturer. Additionally, they will probably begin to visit sites that have “third party” information, and may contact consumers of the wanted automobile and eventually become a frequent or occasional participant in online group discussions with other experienced users. By re-entering the Audi Homepage these potential car buyers and now approved online community members can be targeted for participation. Additionally to the Audi Homepage the Audi Newsletter was used for the identification of potential participants. Especially the subscribers of the

newsletter section “product and technology” were expected as promising source for users with above-average interest in electronics.

Virtual Interaction Design

The Virtual Lab was offered as a Flash and HTML version. The participating customers were confronted in an introductory text with the role of active co-creators for the next generation of Infotainment system in pre-defined automotive segments. Afterwards, the tool usability was explained and information on the Infotainment world was given with the support of animated and picture intensive descriptions. Within the stage of *Ideas and Concepts* users had the possibility to express their Infotainment visions no matter how curious or bizarre they appeared. A design scribble of a possible future interior was introduced as teaser to enhance creativity. In the *Design and Engineer* stage the user was able to configure their individually desired radio-navigation concepts as virtual prototypes including different combinations of features and functions. The next user task was to evaluate previous launched and further considered Audi telematics services in dependence of different scenarios of usage. This information should help to offer predefined service-sets for different customer groups. To simplify the evaluation task a rating matrix from 1 (not important at all) to 10 (very important) was offered to the user. Using drag and drop functionality about 20 service options could be ranked within this matrix. After that, the Kano-Model [12] was used to find out more about the correlation between the fulfilment of Telematics service needs and customer satisfaction. The Virtual Lab concluded with questions on demographics and user attributes mentioned above in step two of the case.

Following is an excerpt of results which are very valuable to gain insights concerning user acceptance and perceptions of the virtual interaction design. The analysis is based on a 5-point Likert scale with 1 as the positive and 5 as the negative extremity.

- Fun Factor of participating in the Virtual Lab: Mean 1,98 ; Standard Deviation 0,79 ; n=1464
- Virtual Lab usability and task complexity: Mean 1,46 ; Standard Deviation 0,66 ; n=1459
- Real world imagination of virtual presented functions and features: Mean 1,76 ; Standard Deviation 0,77 ; n=1457
- Articulation of individual wants and needs supported by the interactivity of the Virtual Lab: Mean 2,21 ; Standard Deviation 0,90 ; n=1435

- Feeling of being integrated actively in NPD: Mean 2,33 ; Standard Deviation 1,03 ; n=1429
- Future Participation in NPD (not restricted to Infotainment systems): yes 78,2%, no 21,8%, n=1365

These initial descriptive findings indicate a very positive overall perception and acceptance of the virtual interaction design by the users.

User Access and Participation

A pop up window which occurred for every fifteenth visitor on the Homepage was used to recruit the participants. Using this approach the number of participants of the Virtual Lab could be reduced to a set of persons which is possible to handle keeping in mind that thousands of visits a day are usual. Moreover a random sample could be drawn of the Audi Website visitors as the chosen parent population. Another positive aspect of the pop up approach was that multiple fill ins of users who may intentionally influence the outcome of the study could be avoided. The response rate 2,55% was quite satisfying. The Newsletter subscribers were recruited separately. A visible invitation to take part in the Virtual Lab was placed in the header of the monthly edition. The attained response rate of 0,94% and 148 participants was not satisfying. A reason for the relatively weak rate of response may be that newsletter subscribers were already recruited via the Audi Homepage. However, there was no possibility to examine this effect more closely. Financial incentives or other prizes were not offered to the participants. Intrinsic motives turned out to be sufficient to collect a large sample of Virtual Lab participants. To discover possible effects of different recruiting methods on participation and study results a third offline control group was added as a third sample next to the Audi Homepage and the Newsletter sample. This control group consisted of 189 Audi car buyers who picked up their car directly at the Audi Customer Center in Ingolstadt and who agreed to take part in the study with the help of installed terminals. Differences in the answering behaviour of the three different samples existed only partially to a very moderate extend.

The strategy to use the Audi community centred on the homepage to integrate users with different characteristics related to the different development tasks of the virtual interaction design turned out to be successful. 9,4% early adopters, 73,3% routine users and 15,3% laggards were identified (n=1443). Furthermore, over 3% had high values (at least 2 of a 5-point scale) regarding four Lead user attributes at the same time (Lead User variables were operationalized following suggestions derived from the work of Urban and von Hippel [52]). The average age of participants

was 33 years (max. 79 years, min. 13 years). 95,9% were male, 3,1% were female participants. The users' contributions must be carefully analysed and interpreted according to the identified personal characteristics and attributes. For example, Lead Users as leading edge users may be qualified to identify emerging needs in the future but definitely should not be assumed as representatives for current market segments.

4. Discussion and Implications

In this practice oriented report, the authors introduced the CBI method as a logical process to utilize the innovative potential of online communities.

The results of the empirical applications of the CBI method appear to be very encouraging. Nevertheless, it is difficult to claim its general usability. Yet, there is no study indicating the effectiveness and efficiency of CBI for ongoing, continuous customer integration.

A major finding derived from the empirical application is that community members are capable and willing to contribute to virtual co-development. Between 200 and 3000 participants took part in the conducted studies. The fun-factor and intrinsic stimuli proved to be more important than monetary incentives to motivate the participants to carry out the presented development tasks what sometimes lasted up to forty minutes. The degree of detail and the quality of the problem solutions generated by the community members were remarkable [22]. Even though the contributed ideas were often already known by the producers a user-centric problem perspective and details could be added. Approximately between three and fifteen percent of the community members' ideas and suggestions of the community members were completely new to the R&D and marketing department. These ideas were internally ranked as very attractive by using assessment scales including the dimensions "market potential", "degree of newness" and "technical feasibility". The presentation of entire product specifications or finished prototypes could not be observed yet. Such contributions will require further modifications for the identification of communities, e.g. the personal contact to closed communities of professional designers and experts, and for the incentive systems, e.g. patent sharing. However, the general principles of CBI can also be applied in this case.

An average of 80 percent of the participants signaled their willingness to support the innovating companies again in future initiatives for NPD. An

ongoing series of interactions over a certain period then will lead to the development of a virtual relationship based on mutual trust [24]. The community members become virtual co-workers, who identify with the company and the product in which development process they are integrated. Community members who delivered valuable contributions in prior interactions qualify for long term collaboration. Result could be an institutionalized "community of innovation" to gain rapid-response and instantaneous feedback concerning different innovation projects throughout the entire innovation process [18].

Despite the promising results it is important to be aware of existing challenges in market research which have to be addressed for CBI as well. The threat that competitors may get access to information that should be kept secret and the challenge to assure representativity for defined market segments - especially important for the Test and Launch stage - must be taken into account. Moreover the authors could observe that project restrictions like budget restraints or interface problems between marketing and R&D departments, e.g. in the sense of the "not invented here" syndrome [28] that leads to rejection of external generated ideas, often forced managers to accept compromises when carrying out the proposed procedure of CBI. Additional effort and maybe also resources must be taken in consideration to overcome these disturbances at least as long as the CBI method is not widely accepted and implemented on a large scale.

While practitioners may wish to use the CBI method in the presented form, for academicians this emerging and evolving concept will be part of the future research agenda. The collected case study data is starting point for a more extensive research focusing also on quantitative validation. The application of web-based methods, visualization and the different parameters of interaction design under consideration of contingency theory should be a key area of research. Attitude theory can be applied to explore the expectations and acceptance of the innovating companies' to adopt this new method [6]. From a customer or user-centric perspective motivational aspects are of major interest. Studies concerning the impact of CBI on innovation success are just beginning and are restricted to the initial findings of the conducted case studies. Therefore, the actual market impacts of co-developed products could not be tested on a large scale as most of the CBI projects are not carried to the point of testing the innovations in an actual marketplace.

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