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# Social Crowd Integration in New Product Development: Crowdsourcing Communities Nourish the Open Innovation Paradigm

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**Abstract** *The core of the open innovation paradigm is based on the principle of collecting ideas from external sources into the organization, and bringing those adapted, transformed and enriched ideas to the market. However, under the constant pressure of being innovative, companies have to try harder to tap their customers' knowledge and abilities. Crowdsourcing communities provide an arena for a vast amount of consumers to actively participate in innovation processes. However, as this kind of external participation in innovation processes is still in its infancy, organizations need guidance and analytic support to reveal the potential of the open innovation paradigm. Therefore, this paper analyses new product development using social crowd integration concepts and—as a result—points to further promising directions and subtopics to perform future research in this area.*

Keywords Co-creation · Collaboration · Crowdsourcing · Innovation · New product development · Online community · Open innovation · Social communities · Social CRM · Social crowd

## Introduction

In recent years, one could observe that companies in the technological consumer goods industries featured tremendous knowhow on developing technically sophisticated products; however, the majority of these innovations fail on

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the market (Kunz et al. 2011). The main reasons for these pitfalls are the lack of market orientation and inappropriate market research (Kohler et al. 2010). The challenge is that, in addition to having increasingly to cope with fast changing technologies and consumer needs, companies have to strengthen their competencies to stay competitive (Prahalad and Ramaswamy 2004; Sawhney et al. 2005). To keep with this accelerating pace, companies use the Internet in various ways to shape their business processes (Bächle 2008).

'Web 2.0' is a key term that is apt to bring companies and users closer together. Web 2.0 platforms focus on user-generated content, applications, and mechanisms to evaluate the user-generated content (Bächle 2008). This concept is based on the principle of transparent information generation, information sharing, and network effects (Hendler and Golbeck 2008). The popularity of Web 2.0 is reflected by a continuously increasing number of Web 2.0 applications. The emergence of communities is an essential element to achieve network effects in Web 2.0. A community is a group of individuals, which develops common will and knowledge, shares experiences and builds its own identity (Wenger and Snyder 2000). Communities benefit from the principle that active participants bring in their knowledge and share ideas.

Leveraging such shared ideas for businesses' product design would benefit both, companies as well as users. However, opening the outward value creation process requires new organizational principles that support this integration of external actors in organization processes.

'Crowdsourcing' is a phenomenon that may provide good opportunities for companies to internalize consumers' ideas. Recent literature (Bayus 2013; Brabham 2008; Lemeister et al. 2009) outlines the phenomenon of crowdsourcing and discusses how companies may benefit from crowdsourcing communities. However, so far, there is no research that investigates how the social crowd may be integrated in the different stages of new product development (NPD); an idea that continues the principle of open innovation (Chesbrough 2003) by online mass participation. Addressing this research gap, this work con-

tributes to understanding the social crowd integration for new product development (NPD). It dedicates to the evolving capabilities of innovation using crowdsourcing communities shifting the open innovation approach of Chesbrough (2003) from integrating external organizations' ideas and knowhow to social crowd integration concepts in NPD.

This paper is structured as follows: In the next section a theoretical background about the preconditions and nature of social crowd integrating concepts are shown, including both, the active customer postulate as well as recent developments towards social crowd integration. ''Using the Social Crowd for New Product Development'' section pinpoints NPD processes using crowdsourcing. ''Discussion'' section discusses the benefits and challenges of the social crowd integration concept. Finally, ''Conclusion'' section summarizes the major findings concerning social crowd integration and concludes by discussing future areas of research and likely developments.

## Theoretical Background

Today's consumer empowerment affects both, a company's internal NPD processes as well as how a company is perceived on the market by consumers (Fuchs and Schreier 2011). The emancipated consumer is critical-minded thanks to the powerful Web applications that facilitate the acquisition of information and, thus, provide more market transparency. Due to lower cost of many activities during periods of power coordination on a digital basis, the transaction costs are decreased (Fuchs and Schreier 2011). Within this context, the Internet amplifies the power position of the customer to the provider due to a better ability to interact with the provider in anonymous markets (Customer Participation Empowerment) and an increase in options regarding the consumer goods (Customer Information Empowerment).

### The Active Customer Postulate

To better cope with the consumer empowerment, companies attempt to build close relationships with consumers (whether current customers or potential ones) and increasingly integrate them into the company's value creation process. Alvin Toffler (1980) was the first to describe the active role of a consumer with the term ''prosumer''. Constantinides and Fountain (2008) explain, with reference to this term, the phenomenon of how people

communicate, make decisions, socialize, learn, or are entertained. Here, the individual and group behavior changes the power structure of the market and has a lasting impact on the business world. In context of the empowered consumer, the term 'Social Media' is frequently mentioned; it refers to interactive online platforms, which individuals and com- munities can use to share, discuss, co-create, and modify user-generated content (Kaplan and Haenlein 2010).

Prosumers strive towards being involved in the value creation process more than just being consumers: for instance, they want to contribute as developers or producers (O◊Hern and Rindfleisch 2009). To give an example, prosumers provide information about their preferences with respect to the customization or personalization of goods; this information serves as the basis for the production of the final good. As a result, prosumers can be regarded as active participants in product development processes because, due to their interaction with online content and their contribution to content generation, companies con- sider them as partners in their product development processes (Ritzer and Jurgensson 2010).

Considering this new role of users, who participate through their online activities, new business models evolve, which integrate prosumers into the value chain. Research has shown for the industrial goods sector that the integration of customers in the product development process pays off, providing greater success for all involved parties (Füller et al. 2004). As a result, companies increasingly integrate customers into the value creation by absorbing their knowledge to develop appropriate products to meet the customers' needs (Prahalad and Ramaswamy 2004; Sawhney et al. 2005). With respect to the way of customer integration into a company's processes, we can distinguish these alongside the dimensions of continuity and activity level. The continuity level may range from one time interaction to continuous participation in the entire development project. The activity level may range from passive to active customer integration as depicted in Fig. 1 (Füller and Matzler 2007).

The capabilities, that the Internet provides, influence how customer collaboration takes place and shapes the interaction between company and customer to get valuable customer input (Füller et al. 2006). As a result, key benefits occur and manifest themselves as far as communication, the intensity and richness of the interaction, and finally the size and scope of the audience are concerned (Prahalad and Ramaswamy 2004; Sawhney et al. 2005). The resulting two-way communication allows companies to learn about

and from customers (Nambisan 2010; Füller and Matzler 2007). The richness of this interaction evolves from individual to social knowledge (Sawhney et al. 2005), due to the dispersing communication reach of social networks (Heidemann et al. 2011). Füller and Matzler (2007) emphasized different characteristics of key benefits, including the role of the customer, the type of interaction, the size and scope of audiences, and the focus of quality. All of these describe the shift from a company-centric innovation perspective to a customer-centric one. In this respect, the customer centric view is engaged in the active role of the customer, as described in Table 1.
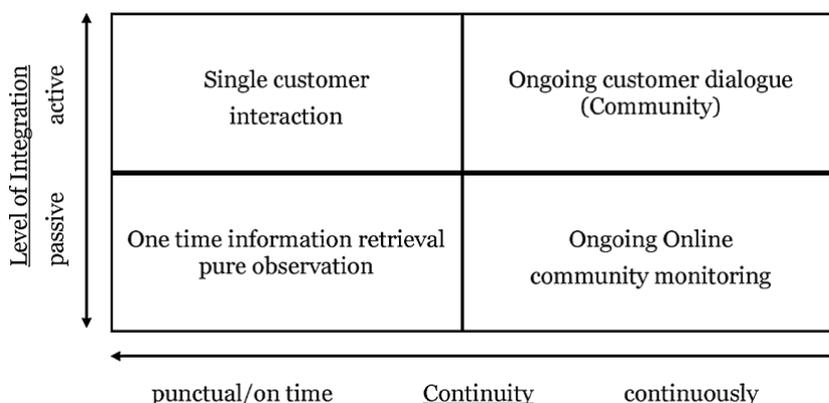
*Towards Social Crowd Integration Concepts*

The active role of the customer is accompanied by the rapidly evolving global trend of social communities representing both a societal and economic phenomenon (Heidemann et al. 2011). From a sociological perspective, in contrast, networks form interaction meshes (e.g., acquaintance networks) that have no joint goal, but combine different goals of individual actors and groups. Therefore, from a company perspective, the value of the use of such a network depends largely on the number of users involved. Also for each individual participant, the

benefit increases by so-called positive network externalities, because more other people participate in this network. The key competences of social communities are the rapid communication and the resulting broad dispersion in the network (Heidemann et al. 2011). Boyd

and Ellison (2007) defined social community platforms as web-based services allowing individuals to construct a public or semi- public profile within a bounded system, to articulate a set of other users with whom they share a connection, and to view and traverse their set of connections and those made by others within the system. The rapid communication and dispersion allows enhancing the process of idea generation and conceptualization dramatically within the NPD pro- cess. Therefore, the tapping of customer creativity is the key application for social communities from the perspective of a company (Heidemann et al. 2011).

Gathering useful information within a social community may be supported either by a passive or active procedure (Park and Lee 2011). The passive method can be characterized as analyzing the dialogues between the customers, without providing any inputs to the conversation. This may be implemented by using text-mining and co-word analysis to extract customer needs and market trends (Park and Lee2011). In case of active information gathering, a company provides a dedicated task for users such as idea or concept generation; the resulting responses are subsequently analyzed (Heidemann et al. 2011). Active information gathering is currently the most common procedure of customer integration (Füller and Matzler 2007).



Fig. 1 Forms of social customer integration (own illustration based on Füller and Matzler 2007)

Table 1 Company-centric versus customer-centric innovation perspective (own illustration based on Sawhney et al. 2005; Prahalad and Ramaswamy 2004; Füller and Matzler 2007)

| Innovation perspective | Company-centric view | Customer-centric view |
| --- | --- | --- |
| Role of the customer | Passive: customer voice as an input to create and test products | Active: customer as a partner in the innovation process |
| Direction, locus and richness of interaction | One way interaction (companies to customers), spot: on contingent basis; focus on individual knowledge | Two way dialogue with customers; continuous: back-and-forth dialogue; focus on social and experiential knowledge |
| Goal of interaction | Extraction of economic value | Co-creation of value through compelling co-creation experiences, as well as extraction of economic value |
| Size and scope of audiences | Direct interaction with current customers | Direct as well as mediated interaction with prospects and potential customers |
| Focus of quality | Quality of internal processes and what companies have to offer | Quality of customer–company interactions co-creation experiences |

As coined by Howe (2006), the term 'crowdsourcing' describes an interactive form of service delivery, which, on the basis of Web 2.0, includes intrinsically and extrinsically motivated users. Crowdsourcing typically comprises the following characteristics: a clearly defined ''crowd'' on the Web, clearly identified groups, a clear goal, clear coating or compensation, online allocated processes, and public tenders for variable content (Howe 2006). As described in Papsdorf (2009), crowdsourcing is the strategy of swapping service by an organization or individual, normally rendered against payment by gainfully employed persons, by means of an open call on a group of unknown actors, where the crowdsourcer and/or the crowdsourcees gain freely usable and direct economic advantages. Crowdsourcees portray prosumers in the crowdsourcing process. Companies often integrate them into the NPD, for instance, to support the innovation and production process. Crowdsourcees assist companies during various problem- solving processes regarding research and development tasks. Thereby they have the possibility to influence a product in its development phase, according to their own ideas, visions, and needs (Bayus 2013).

On the one hand, there are crowdsourcing projects where active participants act rationally and only contribute if they are compensated correspondingly. Typical, result-related payments of crowdsourcing include cash bonuses, small monetary rewards, reductions and price incentives as well as exclusive information (Horton and Chilton 2010). On the other hand, there are many crowdsourcing pro- jects without incentives. In these cases, volunteers are typically motivated by the desire to experience something new, to share knowledge with others, or to accomplish common

goals. Besides the sense of community, the received social recognition, for instance, sensible and creative work, as well as the fun associated with the task itself are motivators for participants to collaborate in projects (Bayus 2013). Much research investigates why people are motivated to devote themselves to activities such as crowdsourcing. Motives can be extrinsic or intrinsic. Extrinsic motives are frequently called motives of compensation or pragmatic motives (Walcher 2007). Intrinsic motives are also referred to as hedonism motives, since they are rather fun based (Walcher 2007). Hedonism motives mainly refer to social aspects and indicate that customers are motivated intrinsically and the personal benefit arises from performing the activity itself since fun and stimulation is found. Further, it is also observable and described by the so-called ''I-designed-it-myself''-effect (Franke et al. 2010) that people tend to be more satisfied with products that they configured themselves. In this respect, the active role of the customer can be motivated intrinsically by altruism or extrinsically by recognition. Altruism refers to helping unselfishly and selflessly by using his or her own resources to do something good for another person. At the group identification, motivated again intrinsically, the supporters identify themselves with the aim of the community, which consists of the initiator and the remaining crowd, and they put their self-interests aside to help the totality (Walcher 2007).

Hierarchy and crowd are distinct concepts with respect to the optimal distribution of group members within the group. Whereas in hierarchy the group members do not have the same rights as only some have the authority to issue instructions or to make decisions, in a crowd there is equality between all group members. Individuals decide freely whether they take on a task and also have the same rights to contribute in decisions. Instructions by other

group members are not carried out (Alonso et al. 2008). The tactical attachment is indicated by a bi-directional connection of group members of crowdsourcing communities. The individual action is carried out as a reaction to a certain previous action in which the group members interacted directly with each other. The group members do not have any action autonomy and the behavior follows certain rules. The result that is achieved by the behavior in the group immediately arises from the group action. There can be a bi-directional connection between the group members to overcome tactical non-unity. The group members are free to choose their reaction, which is subsequently carried out as a response to the previous action. They correspondingly dispose of action autonomy since their behavior may refer to a certain reaction, which was carried out before, but it can also be completely independent of it. The result can ensue directly or indirectly from the group action. In this case, there is no option for reaction to an action since they do not perform any reaction to a previous action. The result arises from the separate evaluation by a portal service (Ickler 2012).

Primarily in the field of ''collaborative intelligence'' numerous possibilities have arisen for new business models on the Web; the most different forms have arisen for the use of the crowd. Collective intelligence is not a new concept and has been investigated in different disciplines. The MIT-Center for Collective Intelligence describes this concept as ''Groups of individuals doing things collectively that seem intelligent'' (MIT 2013). Social Web applications enable new possibilities and application fields for the concept of collective intelligence. In recent years, not only the extent of user-generated contents, which was explained in the previous section, has arisen, but also and especially the networking, interactivity and the openness of the users, who promote collective intelligence. Users gain a collective power which they use, for example, to add reviews and, thus, to contribute to collective intelligence with their behavior. With its participation on the Internet, the crowd has the power to achieve goals, which individuals or organizations alone could not realize (Ickler 2012).

The so-called ''swarm intelligence'' is particularly based on the concepts of the stigmergy and emergence. At stigmergy the individuals of the system communicate not immediately but only indirectly with each other by modifying their local surroundings. The ''made together'' becomes a trigger for following activities and also for general instructions for how to continue with an individual

operation (Bonabeau et al. 1999). This applies to the crowd on the Internet where many users communicate with each other by modifying their common virtual surroundings (common based peer production). In this regard, information is rather stored locally and found by the involved agents whose next actions determine what is to come. The information put down locally can expire quickly, though. So an optimal solution is not always guaranteed. Emergence describes the quality of the swarm to achieve a result immediately through the direct interaction of the group members, which can hardly be achieved from a single group member at this complexity or this extent. In short, the swarm achieves results that are more than just the sum of the individual partial results. In relation to the behavior, the phenomenon of emergence can be expressed concerning social insects aptly. It would grip the behavior of an insect to equate with a human too briefly, though. The strict following of rules of insects carry the example of circle mill to death, while in humans the individual decides independent from the others and interrupts the fatal circulation for him. A highly referenced example of swarm intelligence is the Online Encyclopedia Wikipedia. Users laid out articles. If a sought-after item is announced as not available, the user can make a new article. If an article is perceived as not complete, the article is further enhanced by another user and the content is appended, changed or removed later by another user. Without a central mechanism of control such a comprehensive encyclopedia of relatively high quality is growing over time and represents a remarkable knowledge collection (Ickler 2012).

## Using the Social Crowd for New Product Development

### Social Crowd Integration Compared to the Open Innovation Model

A decade ago, Chesbrough (2003) proclaimed the ''era of open innovation'' and described how the locus of innovation in technological consumer goods industries has migrated beyond the traditional constraints of the central research and development (R&D) laboratories of the largest companies. In contrast to the so-called ''closed innovation model'', companies increasingly commercialized external ideas by deploying outside pathways to the market (Chesbrough 2003). However, these external sources of innovation included rather few company partners or research institutions (Chesbrough 2003; Dalander and Gahl 2010). Com- pared to this rather linear open innovation model, the

social crowd integration is a recursive model harnessing the mass of potential voluntary Internet users (Fig. 2).

Social crowd integration implements external groups or services into the value creation process of a company. This concept manifests the following characteristics (Howe 2006; Ickler 2012): Firstly, in the value creation process the power generated by an external group is installed. Secondly, the integration is carried out based on Internet technology. Thirdly, both, the company and the external crowd consider the integrated partial performances as beneficial.

There are several approaches to the process of new product development, with respect to the number of stages included, varying from three to eight stages (Hoyer et al. 2010; Dahan and Hauser 2002; Füller et al. 2006; Sawhney et al. 2005; Thomke and von Hippel 2002). In essence, though, they all consist of the same components but are grouped with differently granularity; the only exception is the (post-)launch or commercialization, which may also be considered post-NPD. In line with the most commonly cited components, this paper will refer to the following stages: idea generation, idea screening, concepts, design and engineering, testing and (post-)launch.

*Successful Examples for Crowdsourcing in Different NPD Process Stages*

As this section will show, the social crowd can be deployed in any stage of the NPD process; this fact may be under- pinned by successful examples on the market (Table 2). Dependent on the stage of the NPD process, the crowd takes distinct roles and performs different tasks.

In the phase of idea generation, the crowd may contribute as ideators by submitting their ideas on an online platform. This allows companies to collect new ideas in addition to those collected in-house. A practical example for using the crowd for idea generation is Idea Bounty.

In the stage of idea screening, the crowd may be employed to evaluate ideas that are presented on a platform. This can take place in form of rating any of the collected ideas (for instance, with attributing up to 'stars' to ideas, indicating how much the respective idea is valued) or in form of voting for one out of a set of ideas.

This crowd evaluation allows companies to make more accurate and discriminating choices based on the input from the wisdom of the crowd. In addition to better-informed choices, the process for screening ideas typically takes less time compared to traditional screening methods.

Lumenogic is a platform that uses the wisdom of the crowd for evaluating ideas.

The social crowd may also be deployed in the conceptualizing stage. While the evaluation (idea screening) by voting or rating uses quantitative measures, the crowd may contribute in this stage in a qualitative manner by fine-tuning ideas, typically in textual form. Contributing to conceptualization could take the form of answering questions or commenting on given ideas. In this stage, the company benefits from the social crowd by harnessing their knowledge about product ideas from a potential customer's or user's perspective. This, in turn, helps the company to improve product or service ideas. For instance, the platform Quirky offers the crowd the opportunity to participate in this innovation stage.
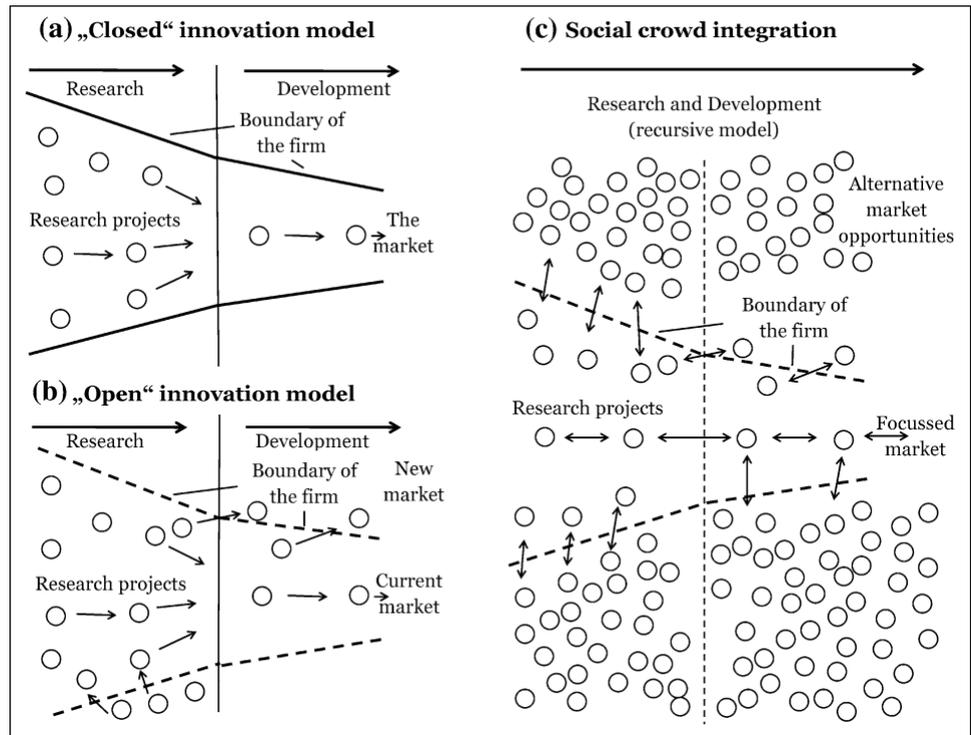
In the design and engineering stage, the crowd acts as designers co-creating the product design. Co-creators are contributing members of the crowd as well as in-house designers and engineers. For a company, this form of crowd contribution is cost effective, since it only pays for the results and not for the design process. The platforms crowdSpring (logo design and graphical design) and 99designs (logo design and Web design) successfully integrate the social crowd in this innovation stage.

For testing a product or service, the social crowd may be deployed to evaluate new products and services against their personal (hidden) criteria, unbiased towards company-intern concerns. In particular, having the crowd testing software is a well-known practice, as software is frequently brought to the market without having beta-testing completed. Here, the consumers test the product under real-world conditions, while the company responds with free post-sale updates. For a company this kind of crowdsourcing allows access to a large number of testers; this enables to run through the test cycles quickly compared to being constrained to a few in-house testers only. Furthermore, having multiple users from the crowd accessing, for instance, a mobile or Web application simultaneously, allows the company to test system stability in usage peak situations. In addition, the company benefits from collecting and aggregating (more or less) objective insights from those closest to the market. For example, Testbirds is a crowdsourcing platform that specializes in testing mobile applications and websites.

Fig. 2 Innovation using social crowd integration in comparison to both, the ''open'' and the ''closed'' innovation model

Table 2 Utilization of social crowd in NPD

| Stage of NPD process | Role of social crowd | Activity of social crowd | Outcomes for the company | Social crowd platform examples |
| --- | --- | --- | --- | --- |
| Idea generation | Ideators | Submit ideas online | Harvesting new ideas | Idea Bounty (www.ideabounty.com) |
| Idea screening | Voters or raters | Decide which of the ideas seem most suitable for the market | Receive input from the wisdom of crowds to make more accurate and discriminating choices and quickly identify the winners and game changers | Lumenogic (www.lumenogic.com) |
| Concepts | Conceptualizers | Answer questions or comment on ideas | Harnessing customer knowledge about product or service ideas, which in turn helps the company to improve the new products or services | Quirky (www.quirky.com) |
| Design and Engineering | Designers | Co-create the product design | Cost effective, as the company only pays for the results | CrowdSpring (www.crowdspring.com) 99designs (99designs.com) |
| Testing | Product testers | Test and evaluate products or services; crowd-testing software | Having a large number of testers in order to test a product or service quickly and simultaneously, unbiased towards internal company's concerns Collecting and aggregating objective insights from those closest to the market | Testbirds (www.testbirds.com) |
| (Post-) Launch | Marketers | Promote product or service | Having a crowd acting as a company's sales force | Leadvine (www.leadvine.com) |

For and after the launch of a new product, the social crowd may take the role of marketers, spreading the word to a large audience. The company benefits from having a large crowd acting as its sales force. This is particularly fruitful, as potential customers tend to believe and trust customers more than a company's official sales force, in particular among friends. Table 2 shows the described

## Discussion

The idea of crowdsourcing for NPD allows intrinsically and extrinsically motivated customers to influence a product in its development phase, according to their own ideas, visions and needs, which elevates market acceptance of the developed products and may strengthen customer loyalty.

From a company's perspective, designing the NPD process with the help of active customers entails several advantages. Successful examples on the market demonstrate particularly the benefits for the company, such as harvesting new ideas, receiving input to make more accurate and discriminating choices, which in turn helps the company to improve the new products or services, having a large number of testers in order to test a product or service quickly and simultaneously, unbiased towards internal company's concerns, or having a crowd acting as a company's sales force. Further, customers are directly involved in the NPD processes, which leads to a reduction of risk thanks to the response to customer feedback before the actual product launch. In addition, companies gain many suggestions for future innovations, for example, for the design of prognosis. In terms of quality, the products that are brought forth by customers are comparable to suggestions of experts. Furthermore, companies benefit from lower costs, as incentives for crowdsourcing are essentially cheaper than, for instance, expenses for expert consultancy and evaluation. Concluding, a heterogeneous mass of decisive individuals can be as useful and productive as a handful of experts (Bayus 2013).

However, besides the benefits of crowdsourcing, companies are also confronted with some challenges. For instance, all companies bear a certain risk because crowdsourcing also involves sharing sensitive market research information with the crowd that could be advantageous to competitors. Further, experience has shown that crowdsourcing typically does not lead to radical innovations (Lemeister et al. 2009), because this requires

insight knowledge about company-internal processes, products, and company's values. As a result, radical innovations typically come from within the company.

When picking up ideas from the crowd, the company has to be aware that there is no guarantee that these ideas are free from plagiarism; the crowd may suggest ideas that are already realized in existing products, either with adaptations or without. Thereby contributors may adapt existing ideas consciously or unconsciously.

In addition, idea suppliers are and remain unknown actors who sell their ideas and rights to the company, typically at no charge or at a low fee. As a reaction, professional designers and creative people complain that work orders are not outsourced to employees, agencies, or other external authorities, but to an undefined group of volunteers. Since the crowd usually develops numerous proposals for a low budget, it is difficult for professional third parties to compete (Papsdorf 2009).

## Conclusion

Nowadays, companies become increasingly interested in integrating the social crowd because it is the customers who presumably have knowledge about the customers' experience with existing products and services. In this paper, we identified, how the social crowd may be deployed in various stages of the NPD process. Dependent on the stage, the crowd takes distinct roles and performs different tasks. In contrast to the initial open innovation model, the social crowd integration is a recursive model harnessing the mass of potential voluntary Internet users.

However, social crowd integration has not reached its full potential yet. Still, the use of crowdsourcing has increased significantly in recent years. In particular some groups of digital natives are interested in supporting to develop products and configure them individually. A relevant factor for the future use of the crowd lies in participants' willingness to take appropriate actions.

Besides the social crowd integration in NPD, the decision-making (''real time''-formation of opinion, decision preparation) and the general information management (definition of experts, networking of Knowledge Management Systems) are possible fields of application in the future. The concept may also be applied for forecasts, for example, in economic or business activity prognosis and also in traffic management. Social forecasting is a business tool used to make predictions,

analyses and to gather data about future developments. In order to receive predictions about future events, out of the collective knowledge of a crowd, special incentive mechanisms are applied. Contrary to crowdsourcing, the interactive value creation neglects self-organized amalgamations and refers to the business side. It tries to develop a better solution and frequently originates from the dissatisfaction of consumers. The in- house applications, like for example the motivation sup- port, change management processes or the staff choice, are another area. Also social applications offer individual services in the end, such as fiscal planning or natural resource management.

In the near future, companies will increasingly collect data from multiple sources and synthesize them into something that gives new meaning. As intrinsically and extrinsically motivated consumers are willing to share ideas and content everywhere on the Social Web, the findings of this paper have highlighted the potential of integrating the social crowd in various stages of the NPD process. However, as this kind of external creation and curation is still in its infancy, the authors emphasize the need for more in-depth research on how companies' social crowd integration will take place in order to nourish the open innovation paradigm on the Internet.

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**Key Questions**

1. How are crowdsourcing communities shifting the open innovation paradigm from integrating external organizations' ideas and knowhow to social crowd integration concepts in NPD?
2. In which stages of the NPD process can social crowd concepts be integrated?
3. What are the roles and activities of the social crowd in NPD?

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