

# Crowdsourcing

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## 1 Crowdsourcing – A Phenomenon Driven by Practitioners

By now, in media as well as in Internet business, crowdsourcing is acknowledged as an innovative form of value creation which must be taken seriously and is realized in various different forms. The rich diversity of facets which crowdsourcing may assume is revealed by considering a few examples.

Numerous firms benefit from the enormous potential of the Internet users' knowledge by publishing their R&D problems on the crowdsourcing platform [Innocentive.com](http://innocentive.com). These organizations themselves do not possess the relevant resources required for solving a mostly quite specific research problem satisfactorily. Thus, a community of about 250,000 users (consisting of researchers, engineers, etc.) addresses the problem and solves the issue posted by the organization. Potential problem solvers may further look forward to respectable financial incentives. Thus an

equilibrium of give and take in value creation is achieved under the conditions of the age of the participative web.

Rather the crowd's creativity than its pure knowledge builds the basis of [Threadless.com](http://Threadless.com). Here the so-called crowdsourcees create designs for t-shirts and other print products. Then the crowd evaluates the creative work. Those design propositions which complete this process successfully are produced by Threadless and sold in the online store, with the designer being entitled to a share of the turnover.

While a financial incentive is provided in the former two examples, there are also crowdsourcing appearances that work well without giving crowdsourcees any prospect of monetary reward. The most popular example to mention here is [Wikipedia.org](http://Wikipedia.org), whose users have access to a quantitatively and qualitatively steadily growing pool of knowledge. By disclosing its cognitive intangible resource "knowledge", the crowd creates value for the general public. It is notable that all this proceeds without a company in the background aiming at making profits, as the online encyclopedia is financed by donations only.

While the principle of crowdsourcing is the kernel of the before-mentioned companies' business model, we can recently also observe an increasing number of "traditional" firms which are partially integrating crowdsourcing into their business processes. Lego's DesignByMe is one particular example where users design new Lego models and are allowed to evaluate models proposed by other users.

## 2 Defining and Conceptualizing Crowdsourcing

Approaching the phenomenon crowdsourcing from a practical point of view with its various forms of realization, as well as from a theoretical point of view with different definitional standpoints (e.g., Bonabeau 2009; Brabham 2009; Howe 2009; Kleemann et al. 2008; Leimeister et al. 2009), we can deduce the following general definition of crowdsourcing:

Crowdsourcing is defined as the act of outsourcing tasks originally performed inside an organization, or assigned externally in form of a business relationship, to an undefinably large, heterogeneous mass of potential actors. This happens by means of an open call via the Internet for the purpose of free, value creative use. The incentive to participate can be monetary and/or non-monetary in nature.

While in most cases a company is the initiator of the open call (crowdsourcer), other project initiators cannot be excluded. The term organization for designating the crowdsourcer thus appears more appropriate as the term "company" often implies the aim of profit making. But this is not the primary focus of all crowdsourcing projects. To give examples, one can again mention [Wikipedia](http://Wikipedia.org) or further the reCAPTCHA-project (<http://www.google.com/recaptcha>) initiated by Google. The latter relies on the Internet users' abilities of text recognition for the purpose of digitalizing books and other text documents.

The use or exploitation of the potential of an undefinably large, heterogeneous mass of users (crowdsourcees) is of elementary importance for defining and understanding crowdsourcing because this is the necessary condition for reaching a new evolution level in (entrepreneurial) value creation. Implicitly, the crowd is characterized by a distinct collective intelligence, particularly the ability of the masses to collectively reach goals by their participation via the Internet, which individuals or even organization were not able to achieve (Leimeister 2010, p. 240).

To possess access to the enormous knowledge potential of the crowd provides the possibility to obtain more efficient and qualitatively better solutions than this would be the case if approaching a problem or task from inside the organization where resources are limited in quantity and quality. This possibility of an almost unlimited integration of a broad mass of unknown actors into the process of value creation differentiates crowdsourcing from the concept of sole customer integration. In fact, crowdsourcing extends the concept of

customer integration because it is not exclusively focused on customers but basically addresses all interested Internet users instead.

Another central feature of crowdsourcing is the fact that it takes place in the online environment. This implies that the open call as well as the implementation of crowdsourcing projects proceed online. The extensive addressing of a principally unlimited number of recipients only becomes possible by means of the reach of the Internet. Furthermore, Web 2.0 tools enable user groups of almost any number to communicate in a decentralized way and to cooperate with each other in order to reach the project goal.

A further aspect of relevance is that the value created by the crowd is assigned to the initiator for free value creative use. This implies that crowdsourcing participants leave all rights concerning their performance to the initiating organization. This is in line with the principle of “free revealing” in open source software projects, which are to be considered direct predecessors of crowdsourcing (Howe 2009, p. 8).

The definition provided above also takes into account the important role of different incentive situations in crowdsourcing projects. These result from the fact that, as far as the potential participation in crowdsourcing projects is concerned, Internet users are driven by two basic sources of motivation: crowdsourcees may generally take an action for intrinsic motives, thus the attempt of doing something for its own sake (e.g., for fun or for the willingness to help), or for extrinsic motives, where the activity itself is merely a means to an end (e.g., to gain benefits such as money or reputation). Here crowdsourcers should note that considering the two types of motivation isolated from each other falls short because they can appear in combination.

### 3 A Typology of Crowdsourcing Projects

#### 3.1 The Innovative Character of Crowdsourcing Projects

In literature, crowdsourcing is often associated with solving problems within the innovation process (e.g., Ebner et al. 2009, p. 345; Chanal and Caron-Fasan 2008, p. 5). In this context, it seems to be appropriate to consider the open innovation paradigm, coined by Chesbrough.

When applying the principles of open innovation, permeable company boundaries are created in order to improve the company’s innovative capabilities (Chesbrough 2006, p. 1). In sum, three different core processes of open innovation can be observed (Lichtenthaler 2009, p. 318; Enkel et al. 2009, p. 313):

- Commercialization of internally developed innovations by using the special competencies of external partners (inside-out process),
- integration of external knowledge into the organization’s own innovation process (outside-in process), and a
- combination of the two types (coupled process).

The outside-in process is of special relevance for the evolution of the phenomenon crowdsourcing because crowdsourcers broaden their own base of resources by falling back on the pool of external knowledge, ideas, and labor for task performances.

Against this background, actual realizations of crowdsourcing can be differentiated into two general categories. On the one hand, there are crowdsourcing projects which distinctly refer to innovation. This type is common in the crowdsourcing practice and the tasks being crowdsourced can mostly be related to the early stages of the innovation process (see Sect. 3.2). The second category covers crowdsourcing projects without any distinct reference to innovations. Crowdsourcing projects of the latter type are executed less frequent in practice and are fewer in number than those of the first type. These crowdsourcing projects are consequently less relevant, but also presented in Sect. 3.3 for the sake of completeness.

#### 3.2 Crowdsourcing Projects Characterized by Innovation

The following categorization covers those types of crowdsourcing projects which can characteristically be assigned to the specific tasks that arise during the early stages of the innovation process.

Technological and scientific problems are announced by organizations using crowdsourcing principles, if the resources in the sense of knowledge and/or capacities inside the organization are not sufficient for solving the problem. The online platform [Innocentive.com](http://www.innocentive.com) described in the introduction constitutes the probably most popular and well-known representative of this category.

The potential of the crowd can furthermore be used for the generation and evaluation of ideas of any other kind. For example, Dell asks the crowd to submit ideas for innovative products or calls for solutions for selective problems on its [Ideastorm.com](http://www.ideastorm.com). Ideas generated here can be evaluated by any user. By means of this mechanism, ideas are prioritized in respect of their relevance. Procedures similar to this can be detected in a large number of other crowdsourcing projects, e.g., rating of t-shirt designs on [Threadless.com](http://www.threadless.com). This mechanism termed crowdvoting is hence an important and widespread functionality of crowdsourcing in order to incorporate the users’ viewpoints, tastes, etc. into the projects.

Finding solutions for specific creative and design tasks plays an important role for the phenomenon crowdsourcing because a multitude of crowdsourcing projects are focused particularly on these tasks. The platform already mentioned, [Threadless.com](http://www.threadless.com), is often cited when referring to this category. Here the crowd designs t-shirt prints and other print products and evaluates them afterwards. Another common example is [Wilogo.com](http://www.wilogo.com). Here, the creative potential of the crowd is at the disposal of companies for the purpose of receiving propositions for new logo designs. Let us also mention [iStockphoto.com](http://www.istockphoto.com) where hobby photographers offer their talents and particularly their photos, which can be licensed by organizations at a fraction of the regular costs.

Market research tasks occurring during the innovation process can additionally be outsourced to the crowd. For example so-called trend scouts keep an eye out for new developments which in the following are made available on [Trendwatching.com](http://www.trendwatching.com) for free or in form of premium content for a fee. Moreover, YouTube asks the crowd to test and evaluate innovative features within the company’s crowdsourcing project Testtube (<http://www.youtube.com/testtube>).

Knowledge transfer and collaboration is of high importance for new ideas to successfully pass through the innovation process. Open source software projects (e.g., Linux), which can be regarded as crowdsourcing, combine both disciplines. Software engineers collaboratively develop new software and share their knowledge with each other. On the crowdsourcing platform [Atizo.com](http://www.atizo.com) organizations can offer tasks to the crowd, which are then performed collaboratively

**Table 1** Selected chances and risks of crowdsourcing

Chances	Risks
<ul style="list-style-type: none"> <li>■ Access to an enormous pool of competence and knowledge</li> <li>■ Enhancement of the relationship between organization and customers</li> <li>■ Increase of brand loyalty</li> <li>■ Anticipation of consumers' needs</li> <li>■ More innovative problem solutions</li> <li>■ Highly modular and flexible processes and less time-to-market</li> <li>■ Cost cutting potential</li> </ul>	<ul style="list-style-type: none"> <li>■ Difficulties of calculating project costs</li> <li>■ Necessity of precise project definition</li> <li>■ Necessity of feedback loops for communication with participants</li> <li>■ Uncertainty of crowd structure (e.g., regarding expertise)</li> <li>■ Risk of losing control (e.g., boycott or obstruction)</li> <li>■ Loss of internal know how</li> <li>■ Consideration of legal framework conditions</li> <li>■ Creation of a motivating incentive structure</li> </ul>

and partially in cooperation with organization members. Besides the recognition by others, a financial reward is offered as incentive. This kind of transfer of (special) knowledge also takes place in other manifestations of crowdsourcing, for example between the users of [iStockphoto](#).

### 3.3 Crowdsourcing Projects not Characterized by Innovation

Besides the crowdsourcing examples mentioned above, which are distinctively characterized by tasks performed during the innovation process, we will now consider crowdsourcing projects which cannot be assigned to any steps of the innovation process.

An example for the latter are so-called public document repositories like [Wikipedia](#) or [OpenStreetMap.org](#), where it is the users' intention to collect geographic data (e.g., GPS data) for a free world map. This particular crowdsourcing project differs from other online map providers (such as Google Maps) as the utilization of the open street map is absolutely free and not bound to any additional conditions.

In posting micro jobs, companies obtain access to an enormous pool of users who perform tasks, mostly of less complexity, in a shorter period of time and for lower costs than this would be possible if the task was performed inside the company. An example is the German crowdsourcing platform [Clickworker.de](#). Here, tasks accumulating inside organizations which cannot be performed by computers are provided to the crowd in order to find a user with the respective fields of interest and qualifications, who is able to find a solution. In doing so, e.g., unstructured data like texts, pictures, or videos are converted by so-called click workers who receive little monetary

compensation. The already mentioned reCAPTCHA project can also be counted to this category.

By the use of Crowdrecruiting, employees are recruited from out of the crowd and employed as freelancers. The platform vWorker.com builds a global market place of potential personnel, where companies can selectively hire appropriate candidates from the crowd. With this kind of crowdsourcing project, the main point of consideration is the executing person, not the task to be executed.

Also fundraising can be carried out under crowdsourcing principles. Here, the financial means required are received from the crowd. The basic idea behind crowd funding is that not – as usual – a small group of investors provides a relatively large amount of money, but in contrast larger number of sponsors as normally each give rather small sums. Look at [Sellaband.com](#), for instance: on this online platform, users can financially support musical projects (album, tour, promotion) of bands they favor. Once the band has achieved its financial goal and acquired the respective budget, the crowdfunders are rewarded with free downloads, CDs, t-shirts, or shares of the turnover of CD sales. The crowdfunding platform [Kickstarter.com](#) has a broader focus. Here projects of diverse categories are supported financially.

## 4 Chances and Risks of the New Form of Value Creation

The examples explained above demonstrate the enormous potential of competence and knowledge to be tapped by utilizing the mechanisms of crowdsourcing. In addition to its general application in the field of problem solving, further advantages are the chance both of enhancing the relationship between organizations and their customers, and of

realizing cost cutting potentials. Challenges of crowdsourcing can mainly be seen in the difficulties occurring during the concrete realization of crowdsourcing projects. These include the issue of adequate project management, as well as the danger of losing control of the projects due to an undefined crowd structure (see Table 1).

## 5 Conclusion

Crowdsourcing is a new form of value creation which is characterized by a variety of different kinds of application. When implementing crowdsourcing correctly and when taking into account the risks pointed out above, organizations can use the potential of the crowd profitably and strengthen their competitive position. Despite the undoubted potentials of crowdsourcing, we will have to wait and see whether, in this highly dynamic environment, the current development will continue and take on new additional forms, or whether crowdsourcing will reach its saturation level soon after all. The phenomenon has spread rapidly within a relatively short period of time but nevertheless it is largely unexplored. Future academic research should provide necessary implications with focus on the processes and motivational forces acting within the crowd as well as their successful utilization in a practice which has been and is still hastening forward.

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