Open Innovation: Investigating Motivations, Nature and Lead Userness of Participants in Incentivized Idea Contests

Abstract

In order to improve the understanding of the required customer characteristics for successful open innovation, we investigated an online crowdsourcing-platform running idea contests. Using an online survey, we looked for motivations and specific user characteristics (e.g. Lead User-characteristics) associated with user innovation. We compared the results for three groups in our sample: registered non-participating users, users participating in one or more cases that have not won any of them, and users that have been declared as one of the winners in one of the cases they participated in. We then related our findings to the literature on user characteristics for open innovation as well as to specific studies into the nature of user motivation in crowdsourcing-initiatives. In this way, our results add to the understanding of both user characteristics and motivations for involvement in open innovation in general, as well as for online idea contests in particular.

1. Introduction

Only recently, online crowdsourcing has emerged as a popular method for finding solutions to difficult problems. Commercial as well as non-profit organizations are starting to use prize-based innovation platforms as tools (for example for the development of medicines against tuberculosis or for the design of solar technologies for rural regions).

The phrase crowdsourcing is a new term for an old phenomenon that was brought to the foreground thanks to the success and massive adoption of the participative web (or Web 2.0). Crowdsourcing describes the act of outsourcing a job to an undefined, generally large group of people (a mass or a crowd) in the form of an open call.

In this paper we will investigate and discuss the user characteristics of the participants of a Belgian online crowdsourcing and idea contest platform called Brainspot (www.brainspot.be) thus contributing to the relative lack of academic papers on the subject (Schenk & Guittard, 2009).

In the first part of the paper we unpack the phrase crowdsourcing and we elaborate on the concepts wisdom of crowds and collective intelligence. In the second part of the paper we look at the user characteristics for innovation as described in the literature. Next, we present the case on which we focus: a Belgian online platform for incentivized idea contests named Brainspot. Part five of this paper sketches our methodology and elaborates on the conducted survey and the recruitment of the respondents. We then present and discuss the quantitative results in part six and seven. In the last part of this paper we also draw some tentative conclusions and suggest directions for future research.

2. Crowdsourcing and the wisdom of crowds

2.1. Web 2.0 and implicit and explicit participation

Web 2.0, usually understood as a large-scale shift toward a participatory and collaborative version of the web, enables internet users to get involved and create content (Beer, 2009) thus supporting and mutually maximizing collective intelligence and added value for each participant (Hoegg, Martignoni, Meckel, & Stanoevska-Slabeva, 2006, p. 32; Jaokar, 2006). On Web 2.0 platforms, content is created externally from Internet companies themselves (Jakobsson & Stiernstedt, 2010).

In contrast to web environments that use proprietary data sources or information, Web 2.0 enables users to create the data themselves (Hudson-Smith, Batty, Crooks, & Milton, 2009, p. 527).

Typically there is little or no direct push from the owners, managers or designers of these sites. Some 2.0 websites assume active, explicit and knowingly participation of their users (e.g. adding photos to Flickr). Other 2.0 websites turn to the analysis of recorded interaction data and collective behavior (e.g. click behavior on the website Amazon). This type of 'implicit' data that users produce is often described as 'exhaust data' (McCracken, 2007), 'read wear' (Hill, Hollan, Wroblewski, & McCandless, 1992), 'drive-by data' (Kedrosky, 2005) or 'attention metadata' (Najjar, Wolpers, & Duval, 2006).

The website in this case study, brainspot.be, is a Web 2.0 site where the direct push factor from the owners and managers of the site is more explicit: incentives are introduced on the website for users to contribute their own data by offering rewards, often of monetary value.

Moreover, the ultimate goal of the website does not reside in maximizing 'collective intelligence' for each participant but in aggregating the 'wisdom of the crowds' for the website owner or manager. We will explain the differences between these two concepts in the next sections.

2.2. Collective intelligence

Pierre Lévy (1994, 1998) popularized the phrase 'collective intelligence' to refer to the intelligence extracted from the collective set of interactions and contributions made by website users (Alag, 2009, p. 6). Thus, collective intelligence points to the capability of a group of people to collaborate in order to achieve goals in a complex context (Noubel, 2004, p. 19) and their ability to produce a result that is better than any single individual could achieve alone (Hiltz & Turoff, 1978; Hiltz & Turoff, 1997).

Collective intelligence or '(…) the synergistic and cumulative channeling of the efforts of many minds towards selecting actions in response to some challenge' (Walton & Krabbe, 1995) is studied in a variety of academic disciplines such as artificial intelligence (e.g. Gregg, 2009; Santana & Correia, 2010; Segaran, 2007; Yu, Kim, Shin, & Jo, 2009) or social sciences (e.g. Jenkins, 2002, 2006; Lévy, 1998; Malone, Laubacher, & Dellarocas, 2009; Noubel, 2004; Weiss, 2005). Collective intelligence emphasizes the deliberative nature and the consultation process that occurs when people share, evaluate and correct information in order to reach a consensus. Thus, the emergence of online networks and communities-of-interest/practice constitutes an incentive to achieve a better 'collective intelligence' (as information can be easily digested and processed).

Collective intelligence refers to a situation where nobody knows everything but everybody knows something, and the information of a specific person is available on request and on an ad hoc basis.

2.3. Wisdom of crowds

Wisdom of crowds carries a completely different meaning. The phrase was popularized by James Surowiecki (2004) in his book 'The wisdom of crowds'. In this book, Surowiecki argues that aggregating individual input from website users may result in decisions that are better than the decisions of a single member of the group (see also: Herzog & Hartwig, 2008; Kameda, 2008). Decisions are most likely to be good ones when they are made by people with diverse opinions reaching independent conclusions, relying primarily on their private information (Surowiecki, 2004, p. 57).

Thus, the emergence of online networks and communities-of-interest/practice poses a threat to the wisdom of crowds because website user may lose their independency. In order to harness the wisdom of crowds on an online platform one needs to ensure that the individual website users can form (and have) their own opinion, even if it is a specific or eccentric interpretation of the facts. Also, someone's opinion should not be influenced or determined by the opinions of those around him or her. People should be able to specialize and need to have access to decentralized information. A last condition for wisdom of crowds is the presence of mechanisms enabling the aggregation and transformation of individual opinions into collective decisions. Wisdom of crowds thus stresses the process of aggregating isolated input while collective intelligence focuses on the process of collaborative knowledge production and management.

2.4. Crowdsourcing

Crowdsourcing-processes usually involve three different stakeholders: the individuals forming 'the crowd', the companies looking to benefit from the crowd input, and an intermediation platform building a link between the crowd and the company, the so-called 'crowdsourcing enabler' (Schenk & Guittard, 2009). Some well-known examples of 'crowdsourcing enablers' or crowdsourcing platforms are CrowdSpring, Amazon's Mechanical Turk or InnoCentive.

Reichwald & Piller (2006) give 'crowdsourcing' a very broad definition. They use the term to identify two different forms user involvement: 'mass customization' and 'open innovation with customers'. The first process enables consumers and customers to create and buy a product personalized to their specific needs and tastes. The second process, 'open innovation with customers', refers to a cooperative relation between a firm and its customers. In this relationship new products or services are developed for the benefit of a larger group of (new) customers.

Kleemann et al. (2008) plead for a more narrow definition as they define that 'crowdsourcing […] takes place when a profit oriented firm outsources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the internet, with the intention of animating individuals to make a contribution to the firm's production process for free or for significantly less than the contribution is worth to the firm'. They place the success of crowdsourcing within a broader evolution within social relations of production, i.e. the emergence of the 'working consumer'. This type of consumer is active in the production process and can be utilized as value-adding workers.

Poetz & Schreier (2011) adopt the narrowest definition of crowdsourcing, as they position crowdsourcing as a process relying on self-selection among users willing and able to respond to widely broadcast idea generation competitions against the active company-initiated search for specific types of users with the most promising ideas.

Schenk and Guittard (2009) elaborate on the similarities and differences between crowdsourcing and open innovation. They believe crowdsourcing falls into the same paradigm as open innovation, as knowledge is distributed and the opening of a firm's R&D processes can be a source of competitive advantage. However, open innovation focuses exclusively on innovation processes while crowdsourcing does not, and open innovation also includes interaction with other firms, while crowdsourcing refers to interaction with individuals. The authors also differentiate crowdsourcing from 'user innovation', such as the Lead User-approach as they see crowdsourcing as firm-driven, while they declare 'user innovation' as user-driven. We can agree on the first part of this statement, i.e. that crowdsourcing is by definition firm-driven, however, we believe that 'user innovation'-approaches are not necessarily all user-driven (e.g. screening for Lead Users to involve them in innovation workshops).

Schenk and Guittard (2009) further characterize different forms of crowdsourcing on two dimensions:

selection and task characteristics enabling them to differentiate crowdsourcing initiatives.

Their first dimension ranges from integrative crowdsourcing to selective crowdsourcing. With the former, many individual inputs together allow to complete a much larger task, so the complementary input of the crowd brings value to the firm. In the latter case, the client firm chooses an input from a set of options that the crowd has provided. The second dimension in crowdsourcing distinguishes between routine tasks, complex tasks and creative tasks.

2.5. Idea or innovation contests

Within academic literature it is noted that online innovation contests, the domain of our case study Brainspot, are becoming more and more popular (Bullinger & Möslein, 2010). Based on the two dimensions from the previous paragraph, idea contests are an example of selective crowdsourcing of creative tasks. Adamczyk (et al., 2010) describes idea or innovation contests as a specific form of crowdsourcing, where innovators use their skills, experiences and creativity to provide a solution for a particular contest challenge defined by an organizer which runs on a web-based platform.

Kristensson & Magnusson (2010) indicated that in management literature, endorsing the involvement of users for co-creation in innovation processes does not fully address the selection problem of finding the right users that are going to be innovative. Online innovation contests can be seen as a solution to this selection problem occurring in 'classical' Lead User-research. By broadcasting the problem to a broad group of users, a process of self-selection takes place, i.e. some individuals respond to the call, while others do not take any action. This way, the difficulties associated with the detection and screening of Lead Users can be overcome.

3. User characteristics and motivations for open innovation

Although the combination of Web 2.0 enabled platforms, crowdsourcing and a bottom-up philosophy on online user-empowerment almost automatically leads to new, online innovation processes, we want to reflect in this paper on the nature of the participants in these online innovation processes: do participants or winners of online idea contests resemble the so-called Lead Users or do they have other characteristics associated with user involvement in innovation processes? Does the motivation for participation in online crowdsourcing

differ from user motivation to participate in other innovation methods?

In order to answer the questions raised above, we first provide a brief overview of user characteristics associated with innovation and at participants' motivations in innovation processes. This will allow to formulate some hypothesis regarding the characteristics and motivations of non-participants, participants and 'winners' within the sample of our case study.

3.1. User characteristics for open innovation

From the literature on user involvement in innovation we can extract various conclusions about the characteristics of participants in open innovation or crowdsourcing initiatives. The most important and widely discussed type of user put forward in innovation processes is the so-called Lead User. Founding father von Hippel (1976, 1986, 2005) suggested involving these Lead Users in order to reach radical innovation, based on customer input.

Lead Users experience certain needs, years before those needs will be general in the market place. Lead Users also expect high benefits when they find a solution to these needs. This means that Lead Users can be used as 'need forecasting laboratories' that provide input for radical innovation in the early stages of the innovation process.

Lettl (2007) drops the Lead User-concept, but rather argues that users with certain specific characteristics can contribute substantially to the development of radical innovation. Bilgram et al. (2008) offer an interesting and comprehensive overview of these characteristics:
(1) lead user criteria (being ahead of market trend, high expected benefit, user investment, user dissatisfaction & speed of adoption);
(2) user expertise (use experience, frequency of use, total period of use, number of different disciplines, product related knowledge, frequency of use of information sources, professional background or hobby);
(3) motivation (extrinsic & intrinsic motivation);
(4) extreme needs and circumstances of product use;
(5) opinion leadership and word-of-mouth.

In line with these characteristics, Duverger & Hassan (2008) suggest that unsatisfied users, or users that have stopped using a certain service or product (also known as 'defectors'), are a potential source for innovative ideas. However, while Lüthje (2003) and Piller & Ihl (2009) argue that technical expertise to develop new solutions may qualify an 'expert user' to

stimulate technical innovation and assist in the development of products that are technically feasible, Magnusson (2009) states that too much expertise and knowledge may on the contrary inhibit development of novel, original and creative knowledge. Kristensson & Magnusson (2010) also state that, in the context of service innovation, 'ordinary' users with contextual use experience and without too much restriction (caused by fundamental technological expertise or knowledge on the potential feasibility), are able to provide innovative ideas.

Poetz & Schreier (2011) researched the characteristics and motivations of participants in an online idea generation contest. They found that participating users tend to have experience with the underlying problem, a sound technical knowledge of the related products, score higher on lead user characteristics high expected benefits from innovations and being ahead of a trend, and creative personalities. However, none of these measures appeared to be significantly correlated to the quality of the submitted ideas. The quality of the submitted ideas was assessed by an expert panel. The authors also concluded that not all participants were true Lead Users, but that the crowdsourcing process had attracted qualified users to participate. When compared to ideas from professionals, the user ideas scored even higher in terms of novelty and customer benefit, and slightly lower on feasibility.

3.2. Motivations for open innovation

The research on the extrinsic (in order to get an external reward) and intrinsic motivations (taking up an activity for its own sake) of participants in crowdsourcing initiatives is still sparse. Kleemann et al. (2008) point out that there is a big difference between participation in open source-like projects and participation in commercial initiatives, where individuals collaborate as 'working consumers' with commercial enterprises. Research on open source and open content projects suggests that extrinsic motivations, such as career opportunities, are often present, but that intrinsic motivation appears to be the decisive reason for getting involved. Lakhani & Wolf (2005) suggest that the experience of being creative is most closely linked to readiness to work on open source projects. Reichwald & Piller (2006) found that dissatisfaction with existing solutions motivates consumers to participate in forms of product innovation.

4. Case: Brainspot

For our investigation, we used a relatively new crowdsourcing intermediary operating in Belgium named Brainspot.

This website is a Web 2.0 site where the direct push factor from the owners and managers of the site is more explicit: incentives are introduced on the website for users to contribute their own data by offering rewards, often of monetary value.

Moreover, the ultimate goal of the website does not reside in maximizing 'collective intelligence' for each participant but in aggregating the 'wisdom of the crowds' for the website owner or manager.

A case is put online with extensive instructions of what is expected from participants together with an absolute deadline for submitting 'solutions' or 'ideas'. All submissions are rated and ranked by the companies and the top ten submission receive a monetary incentive. The users from this top ten are also invited to a workshop with people from Brainspot and from the company. Within this workshop the concrete implementation of the crowdsourcing solutions and ideas is discussed. This way Brainspot tries to tackle the problem that crowdsourcing-ideas tend to be somewhat lower in terms of feasibility than ideas generated through innovation professionals, as was discovered in research by Poetz & Schreier (2011).

Brainspot is targeted at university and college students or young professionals up to the age of 35. The website was founded in 2010 by Evert Martens and counts about 1000 registered users today. Participants in the idea contests on the website transfer all their rights with regard to the ideas, concepts, solutions and elaborations they have entered to the company that has submitted the case. A sum of at least three thousand Euro is divided among the 10 best entries for each crowdsourcing case. At the time of our research, already 6 cases have been completed.

5. Methodology

5.1. Survey

A survey based on our literature review was constructed. The survey was launched and hosted at a secure third party for 2 weeks. It consisted of general questions regarding Brainspot and also of case-specific questions blocks. Only respondents who participated within the specific cases were routed to these questions. Lead Users characteristics were measured by means of statements. These characteristics were assessed for the 6 cases separately but also for all participants in general, as

the underlying orientation of all Brainspot-cases is mostly in the marketing-domain. A final section of the survey gathered socio-demographic data on all respondents.

5.2. Recruitment

An email campaign inviting all the Brainspot members to participate in the survey was launched together with the weekly Brainspot newsletter. Respondents who did not answer the survey were sent a reminder email one week after the initial invitation. Respondents who partially filled out the survey were also sent a reminder email, urging them to complete the questionnaire.

6. Results

In total, 50 respondents completed the survey. This is a rather small sample, so the results should be interpreted bearing this in mind. 70% of our sample is male, 90% is in their twenties and 10% in their thirties, 68% is still studying and 56% has no income yet. As Brainspot is targeting mostly students and young professionals, based on our research we can conclude that the first group forms the majority. 62% of the respondents (N = 31) has not participated in any case yet, 22% (N =11) has participated in one or more cases, but has not been ranked in any of them, and 16% (N = 8) has already been ranked in at least one of the finished cases. It is striking that from these eight winners, only two won only one case. One 'winner' was ranked within two cases, Three winners were ranked in three cases and the two other 'winners' were ranked in four and five cases. This means that for case-specific variables (such as dissatisfaction with the current offering) we can take into account 22 'winnings' in cases from 8 users. However, because of the small sample size no statistical significance between the groups can be assessed, so all of the following results should be seen as exploratory.

6.1. Motivation

The motivation of the respondents to register to Brainspot and to participate in the cases was measured by a ranking question. The most important motivation appears to be the prize money. 50% ranked this as their number one motivation and 18% as their second motivation. The second motivation most important motivation is the possibility to use their creativity. 30% indicates this as their primary and 28% as their secondary motivation. Brainspot as

a means to fill up the 'curiculum vitae' and as a possibility to get in touch with potential employers score significantly lower in terms of motivation to participate. When comparing these motivations among the three groups, we see that this general ranking of motivations applies for the groups 'participants' and 'non-participants'. The winners however differ significantly. 7 out of 8 (87.5%) puts the financial reward as primary motivation and the other winner puts 'creativity' is primary motivation with 'financial reward' as secondary motivation.

6.2. General Lead Userness

Another general part of the survey, that all respondents had to fill out, consisted of the assessment of the Lead User-characteristics for the tasks that were outsourced through Brainspot. As most of these challenges had something to do with marketing, we developed a scale to measure the Lead Userness of the respondents with regards to marketing. In line with Poetz & Schreier (2011) and with Belz & Baumbach (2010), this was measured by seven items, all measured on five-point Likert scales. The Cronbach's Alpha test of 0,93 shows that this scale is consistent and that no items should be deleted. The general score for Lead Userness of all respondents is 3.20, slightly higher than the average 3-score an a five-point scale. When comparing this Lead Userness of the three groups, non-participants, participants and winners, it appears that Lead Userness with regards to marketing is highest for participants (3.67). Winners show a mean of 3.21, while for non-participants have a mean of 3.03. However, partly related to the small sample sizes, these differences are statistically non-significant, so no hard conclusions should be based on these differences. However, this might be an indication that a self-selection took place amongst people registered at Brainspot. Users with low Lead Userness with regards to marketing were less inclined to participate. However, participants with the highest Lead Userness were not declared as 'winners' of the cases, as these winners showed lower degrees of marketing Lead Userness.

6.2. Case specific user characteristics

For each case, we also surveyed whether the participating and winning users had specific knowledge with regards to the subject of the case, whether they had worked at the company that was the subject of the case and whether they were dissatisfied with the current offering of this company. We aggregate these results for the winners of all six of the cases, which totals data for 22 'winnings'.

In six instances, winners indicated they were dissatisfied with the current product or service offering from the company of the particular case. This means that dissatisfaction was present in 27.3% of the 'winning' cases. Strikingly, in 16 instances winning respondents indicated they had no prior case-specific knowledge, which accounts for 72.7%. These numbers were the same for company-specific knowledge as for product- or service-specific knowledge of the subject of the case. In line with these findings none of the 'winners' had working experience at the companies of the cases

7. Discussion and conclusion

The findings within our sample regarding the motivation of participants to engage in online crowdsourcing initiatives contradict the scarce research results that are available at the moment. We found that extrinsic motivations (the prize money) is for most respondents the prime motivation, and that this is even more apparent for the 'winners'. Intrinsic motivations (usage of one's own creativity) come in second place.

With regards to general Lead User-characteristics, it was suggested that the self-selection process of online idea contests results in attracting users with a higher Lead Userness. Within our sample, the average Lead Usersness for the domain of the crowdsourcing platform (marketing) was only a neutral 3.20 on a five-point measurement scale, so we can conclude that the responding 'crowd' showed a slightly higher Lead Userness. However, when comparing 'winners', 'participants' and 'non-participants', it were the non-winning 'participants' who had clearly the highest Lead User-scores. 'Winners' only scored slightly higher than 'non-participants', so our findings are in line with the suggestion that 'ordinary users' might have the most novel and groundbreaking ideas, as users with too much expertise in the given domain, marketing in our case, might be constrained by their prior knowledge which results in less innovative ideas or solutions. One remark should be made with regards to this finding. Research by Belz & Baumbach (2010) suggested that self-assessment as a screening and selection method for Lead Users is not the best method, and that one should look for external indicators of Lead User-characteristics in order to complement the self-assessment method. With regards to our sample, it could be that 'participants' were overconfident with regards to their marketing

Lead Userness, and that this motivated them to participate, while the winners rated themselves more realistically. If this were the case, it might be that there was no actual difference in marketing Lead Userness between 'participants' and 'winners' and that the difference between these two groups should be looked for elsewhere.

Regarding case-specific user characteristics, in more than one out of four instances of 'winning participants', there was a dissatisfaction with the current product or service offering in the domain of the specific case. This partly confirms the finding that so-called 'defectors' can generate innovative ideas and proves further evidence that dissatisfaction can be a motivation for users or customers to innovate or at least to be innovative. Even more striking was the fact that in almost three out of four instances of 'winning participants' the case-, product- or service-specific knowledge was low, which also confirms the findings from the general Lead Usersness of the respondents.

This shows that the online crowdsourcing-model from our case study proved to be efficient. Users were attracted that had few case-related specific knowledge and that were by no means Lead Users or 'professionals' within the specific cases or within the more general domain of marketing. Primary motivation for these users was clearly the prize money and to a lesser degree the fact that they could utilize their creativity.

However, our study also has some severe limitations. As there were 50 respondents within our sample, no statistical significance could be assessed between the different groups. Therefore, our results should be considered as exploratory and as a start for further research into the subject of online innovation contests and of user and customer characteristics for innovation.

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