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Faullant, Rita; Holzmann, Patrick; Schwarz, Erich

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EVERYBODY IS INVITED BUT NOT EVERYBODY WILL COME
THE INFLUENCE OF PERSONALITY DISPOSITIONS ON USERS' ENTRY
DECISION OF CROWDSOURCING COMPETITIONS

RITA FAULLANT^{§*}, PATRICK HOLZMANN*, ERICH SCHWARZ*

§ Centre for Integrative Innovation Management, Department of Marketing and Management
University of Southern Denmark
5230 Odense M, Denmark

*Institute of Innovation Management & Entrepreneurship, Alpen-Adria University
Klagenfurt,
Universitaetsstrasse 65-67, 9020 Klagenfurt, Austria

Correspondence to:

Rita Faullant: rita.faullant@aau.at

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THE INFLUENCE OF PERSONALITY DISPOSITIONS ON USERS' ENTRY DECISIONS FOR CROWDSOURCING COMPETITIONS

Crowdsourcing competitions have been introduced as powerful instruments to integrate users in new product development. While abundant research has investigated motives for participation, little research so far has addressed the reasons why users choose not to participate. We suggest that some potential solvers may refrain from participation from the outset on account of their personality dispositions. In our study we complement existing knowledge about user motivation to engage in co-creation with findings from personality research. In particular, we investigate individual differences resulting from enduring personality dispositions that might affect potential solvers' decisions whether or not to enter crowdsourcing competitions. The results of our study show that the likelihood that users will participate in a crowdsourcing competition increases when they score high on openness, extraversion, and trait competitiveness. Dispositional trust was not, however, a discriminating factor between participants and non-participants.

Keywords: crowdsourcing, idea competition, personality, trust, openness, extraversion, trait competitiveness, decision making

Introduction

Crowdsourcing competitions have been introduced as powerful instruments to integrate users in new product development: they are popular with companies and are seen as a new form of user interaction and as a rich source of innovation. While both broadcasting platforms and also idea competitions launched on the web by companies have become widely used, there is still little theoretical debate on the issue of what it is that attracts users to participate in crowdsourcing competitions. This is in sharp contrast to the state of research regarding collaborative communities. Here the motives for participation are well investigated and often reside in non-pecuniary benefits for the participants such as task fascination, peer-recognition (e.g. Franke and Shah, 2003; Jeppesen and Frederiksen, 2006; Lakhani and Wolf, 2005) and also social and learning benefits (Kosonen et al. 2013, and Kosonen et al 2014). In contrast, crowdsourcing competitions are usually announced along with the prospect of winning monetary rewards. The prospect of winning the prize on offer is, according to some researchers, the main driving force underlying participation (e.g. Terwiesch and Xu, 2008; Muhdi and Boutelier, 2011). We challenge this view and hypothesize that some people might refrain from participating in crowdsourcing competitions from the outset because of their personality dispositions. With our study we aim at complementing research into contestants' motives for participation with factors deriving from the individual personality differences of potential participants. In particular, we propose that individual dispositions on openness to experience, extraversion, dispositional trust and trait competitiveness will explain why some people participate and why others do not. We test our hypothesis in a crowdsourcing contest where we collected data both from participants and also from non-participants who had received the same invitation to participate but had abstained from doing so.

Theoretical Framework

Crowdsourcing competitions

The term “crowdsourcing” refers to the outsourcing by a company or institution in the form of an open call on the Internet to an undefined (and generally large) network of people of a function formerly performed by employees (Howe, 2006). Crowdsourcing jobs may be performed collaboratively in the form of peer-production, but are also often undertaken by individuals working alone (Howe, 2008; Kozinets *et al.*, 2008). Firms that host such crowdsourcing contests can engage with various stakeholders and expect promising outcomes, such as innovative ideas for new or persistent problems (Kozinets *et al.*, 2008).

Idea competitions may be defined as an invitation issued by a private or public organizer to the general public or a targeted group to submit solutions to a challenge within a certain allowed time period (Bullinger *et al.*, 2010; Ebner *et al.*, 2009). Usually a prize is awarded to the winning contribution. In the literature, the term crowdsourcing competition is often used synonymously with other terms such as design competition, innovation or ideas contest, or research tournament (Boudreau and Lakhani, 2013). Idea competitions, or research tournaments, have always played an important role in national industrial development. Many ground-breaking innovations have been delivered by participants in such tournaments and competitions (Adamczyk *et al.*, 2012). One example is the design of a chronograph suitable for accurately determining longitude at sea which was produced in response to a competition launched by the British Parliament in 1714 (Jeppesen and Lakhani, 2010).

Today virtual crowdsourcing competitions are among the most popular and promising forms of open innovation (Piller and Walcher, 2006). Thus pharmaceutical and chemical companies, for example BASF and Eli Lilly, have successfully used problem broadcasting platforms such as InnoCentive to present their problems to experts all over the world in the expectation of receiving creative solutions to their problems (Gassmann, 2010; Lakhani and Jeppesen, 2007). In addition to the use of such platforms as Innocentive or Nine Sigma, which act as intermediaries between scientists and R&D organizations, crowdsourcing competitions launched directly by firms are now also flourishing on the web. Recent examples of businesses launching crowdsourcing competitions include leading lighting manufacturer OSRAM asking contestants for new and consumer-oriented ideas relating to LED lighting; Fujitsu-Siemens seeking ideas for “IT Services for Tomorrow’s Data Center”; and Swarovski looking for new jewellery designs (Füller *et al.*, 2011).

The problem of user attraction

In previous research the two issues of what attracts users to online idea competitions and of what motivates them to make active contributions have been found to be of central importance (Leimeister *et al.*, 2009). However, many idea and design contests end up receiving entries from too few participants, generally only from the highly interested and engaged. Such contests fail to provoke general consumer interest, which in turn results in a poor response (Kohler *et al.*, 2009). This problem has two aspects: on the one hand, virtual idea competitions often do not generate sufficient entries to produce a critical number of high quality ideas; on the other hand,

even if virtual idea competitions are able to attract a large number of entries, the participants often do not engage actively in idea generation (Ebner *et al.*, 2009). With this study, we aim at addressing the first problem of insufficient user attraction. While an individual's decision to enter a crowdsourcing contest may be driven by both intrinsic and extrinsic motivational factors, we propose that the decision whether or not to participate is fundamentally shaped by basic personality factors, meaning that some people are a priori more likely to participate than others, depending upon their dispositional openness, extraversion, trust, and competitiveness.

Personality

Personality psychology since its beginnings has constantly sought to study individual differences characterizing outstanding creative personalities and to explore their uniqueness in terms of personality traits (Feist, 1998). In personality psychology, considerable agreement has been achieved on the theory that five higher order factors constitute the pattern of personality traits across individuals: Neuroticism, Extraversion, Agreeableness, Openness and Conscientiousness (Costa and McCrae, 1992; McCrae and John, 1992; Ostendorf and Angleitner, 2004). The Big Five taxonomy has been supported by considerable evidence over the last decades across different theoretical frameworks, measures, occupations, cultures, and sources of ratings (e.g. De Raad and Doddema-Winsemius, 1999; John and Srivastava, 1999; Liao and Chuang, 2004). As a consequence the Five Factor Model has been employed in and linked to major areas of applied psychology and social science, e.g. emotions and well-being (Larsen and Ketelaar, 1991; Watson and Clark, 1984), life satisfaction (Costa and McCrae, 1980), as well as marketing and consumer behaviour (Faullant *et al.*, 2011; Mooradian, 1996) and motives and values (Schwartz, 1994).

Openness to experience

Feist (1998) conducted a meta-analysis on 50 years of studies on personality and creativity. His findings suggest that above all openness to experience is the one dimension of personality that has been linked most strongly to creativity. Openness to experience describes the extent to which individuals are open-minded, curious, original and imaginative (Costa and McCrae, 1992). Openness is assessed in the areas of fantasy, feelings, aesthetics, actions, and values. People with high scores in this dimension tend to be flexible, intelligent, and sensitive; they have wide interests and tend to critically question existing norms. In contrast, people with low scores are described as conventional, uncritical, realistic, and are assumed to prefer the old rather than the new (Feist and Feist, 1998).

For two reasons it is therefore likely that people participating in virtual idea competitions are more open to experience than non-participants: First, because they are more creative and flexible in their thinking and might therefore also possess a wider solution space that enables them to make more contributions to problem solving. Thus, they are more likely to develop ideas which are potentially suited to providing a solution to the advertised problem. Second, participating in an idea competition is for many people a new situation of which they have had no prior experience. People with high openness scores tend to be more open towards new situations and experiences in general and might therefore be more inclined to become involved in an idea competition. We propose our first hypothesis:

H1: Participants in crowdsourcing contests have higher openness towards experience scores than non-participants do.

Extraversion

Extraversion is the second dimension from the Big Five personality framework that might influence an individual's willingness to enter a crowdsourcing competition. Extraversion is characterized by venturesomeness, affiliation, positive affectivity, energy, ascendance and ambition (McCrae and John, 1992). People with high scores on this dimension have a high preference to interact with others and show interest in and friendliness towards others. Thus they are highly communicative and gregarious, and have a need for environmental stimulation (John, 1990). Participation in a crowdsourcing competition implies presenting an idea to a company and thus requires pro-activity and also some venturesomeness. Therefore we propose:

H2: Participants in crowdsourcing contests have higher extraversion scores than non-participants do.

Trust

A third component rooted in personality that might be relevant for the decision whether to participate in idea competitions is trust. The concept of trust has been investigated extensively both as trust towards other persons and within specific interpersonal relationships. More recently, however, researchers have also investigated trust towards online organizations in order to explain consumer purchasing behaviour on the internet (Gefen et al., 2003; Pavlou 2003), and a further line of research has focused on trust towards technologies (Grabner-Kräuter & Faullant 2008). In addition to dealing with trust as a belief in a specific other trusted party, the organizational trust literature often conceptualizes trust as dispositional trust, or propensity to

trust. This disposition is the extent to which a person displays a tendency to be willing to depend on others across a broad spectrum of situations and persons (McKnight *et al.*, 2002). Mayer *et al.* (1995) define the propensity to trust as a stable within-party factor, which can be thought of as the *general willingness to trust others* (p. 715). This type of trust has its roots in personality psychology (e.g. Rotter, 1967) and recognizes that people develop, over the course of their lives, generalized expectations about the trustworthiness of others. Also, the Big Five personality framework encompasses “propensity to trust” as a facet of the agreeableness dimension. Persons scoring high on this dimension assume, in general, that others are competent, benevolent, honest and predictable. People with low scores on this dimension are described as being cynical, pessimistic, and sceptical (Costa *et al.*, 1991). In situations in which individuals are less familiar with other parties (as in crowdsourcing competitions) and therefore lack sufficient information to evaluate the respective trustworthiness of others, propensity to trust is assumed to be more salient (Mayer *et al.* 1995). Dispositional trust seems to be of special importance in the initial stages of building new relationships (Chau *et al.*, 2006). In several studies a person’s general disposition to trust was found to influence consumer trust in online vendors (Gefen, 2000; McKnight *et al.*, 2002; Teo and Liu, 2007), as well as trust in technology such as the Internet (Grabner-Kräuter & Faullant 2008).

In the context of idea competitions trust has so far only been investigated to a limited extent. Ebner *et al.* (2009) have, for example, on an explanatory basis looked at motives for participating in online idea competitions. They suggest that trust could be a pre-requisite for participation. We propose that dispositional trust is an important factor in determining potential solvers’ participation willingness: individuals participating in such idea contests have to trust the organizer who has posed a problem (i.e. the company which is seeking solutions or the broadcasting platform). As pointed out by King and Lakhani (2013), with crowdsourcing competitions it is the potential problem-solvers who bear both the cost of developing an appropriate solution and the risk that the solution they have developed will not be accepted. Franke *et al.* (2013) found that people who think that the procedures or the awarding of prizes in crowdsourcing contests will not be fair, will, from the start, have no interest in participating. Thus contestants have to trust the hosting company or the broadcasting platform that there will be fair, correctly handled procedures and that there will be no misuse on the part of the company of the ideas which have been submitted. This applies for both online and offline idea competitions. Therefore, we propose:

H3: Participants in crowdsourcing contests have higher levels of dispositional trust than non-participants do.

Trait competitiveness

As their name suggests, crowdsourcing competitions have an inherent competitive element that might influence an individual's decision whether to participate or not, based on the individual's specific knowledge and abilities. Amabile (1996) proposed that the negative effects of how a competitive situation is experienced may depend on certain individual difference traits. We suggest that one such trait is trait competitiveness. This trait describes an individual's tendency to seek or avoid competition in daily life. It has been defined as "the enjoyment of interpersonal competition and the desire to win and be better than others" (Spence and Helmreich, 1983, p. 41). Highly competitive persons compare their performance with that of others and pay especial attention to outperforming others. This motivates them to try harder and to win competitions. The consequences of trait competitiveness have been investigated primarily in sports tournaments, also in job performance, i.e. personal selling by sales personnel (Brown & Peterson, 1994), and lately also in the field of consumer behaviour, where competitive consumption styles have been studied (Mowen, 2004). In this study, Mowen found that people high in trait competitiveness are more likely to engage in behaviours that allow besting others directly, as is the case in competitions. We therefore hypothesize that trait competitiveness is an essential factor explaining why some creative individuals engage in virtual idea contests and why some others do not participate.

H4: Participants in crowdsourcing contests have higher levels of trait competitiveness than non-participants do.

Empirical Study

Study setting

In order to test our hypotheses we conducted a quasi-experimental crowdsourcing competition to assess the personality traits of both participants and non-participants in the dimensions under review. To this end, our university, in cooperation with the government of an Austrian region, organized an idea competition with the title "Moving Ideas for our Region". The organizers who launched the contest were looking for project ideas that had a clear sports focus, possibly combined with health, tourism and/or environmental issues. The topic was formulated in a

sufficiently broad way in order to stimulate a wide range of ideas from different groups in the regional population and potentially also from students. It was publicized in several regional newspapers, via radio broadcasting stations, and also on the homepage of the regional government. It was also widely advertised on screens and homepages at the university, and in several lectures as part of courses taught by the authors of this paper students were directly exposed to the advertisement. A total of €8,000 was available in prize money for the top five ideas. The submission phase lasted for 10 weeks. Participants had to submit their idea by email along with personal information in a web form. A professional jury comprised of six experts from the fields of sports, health, tourism and innovation selected the winning ideas. In total 76 ideas were submitted and evaluated by the jury, of which eight were submitted by students.

Survey

All the participants who had submitted an idea in the crowdsourcing competition received an invitation to fill out a self-administered online questionnaire. To avoid a bias due to the results of the jury selection the survey was carried out before the winners were announced. The same invitation to complete a self-administered questionnaire was distributed to those students that had been directly exposed to the advertising of the contest, as well as to the scientific and administrative personnel at the university. Our total survey sample consists of 69 (30.5%) participants and 157 (69.5%) non-participants. Participants in the idea competition were on average 39.4 years old and primarily male (59.4%). Among the participants 40.6% had a university degree. The average non-participant in our idea competition was 28.2 years old and primarily female (52.2%). 24.2% of the non-participants had a university degree.

In a next step we conducted independent samples T-Test and Chi-square tests to control for significant differences between the two groups. We found no significant differences in gender (Chi-square = 0.159, $p = 0.690$) between the groups. However, there were significant differences between the groups with regard to age ($F = 27.411$, $p = 0.000$) and level of education (Chi-square = 39.097, $p = 0.000$). Consequently, we included age and level of education as control variables in the logistic regression model.

Measurements

The constructs used in the study were based on existing scales from the published literature. The personality traits of openness and extraversion were measured using a validated German short scale developed by Rammstedt *et al.* (2004), with each dimension comprising 5 items. Sample items for openness include “I am interested in many things” (O1) and “I appreciate

artistic and aesthetic impressions” (O4). Sample items for extraversion include “I am enthusiastic and I can easily sweep others away” (E2) and “I am outgoing and sociable” (E4). We achieved satisfying scale reliabilities for openness with Cronbach’s alpha of 0.743, and, by removing one item, for extraversion, of 0.711. To assess trait competitiveness we used the five-item scale developed by Helmreich and Spence (1978) with Cronbach’s alpha = 0.772. Sample items were worded “I enjoy working in situations involving competition with others” (CT1) and “It is important to me to perform better than others on a task” (CT2). Dispositional trust is a personality facet of the original NEO-PI-R inventory. We used the German validated scale, developed by Ostendorf and Angleitner (2004), which assesses this trait on eight items. Sample items for measuring dispositional trust are: “My first reaction is to trust people” (DT6) and “I have a good deal of faith in human nature” (DT8). The analysis yields a Cronbach’s alpha value of 0.825. All items were rated on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Table 1 displays the wording, means and standard deviations for all items used in the analysis.

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Table 1
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Results

Mean Comparisons

To compare the two groups, we conducted independent samples T-Tests. The findings of the study are summarized in Table 2. The results indicate that there are significant differences in the personality traits between the participants in the idea competition and the group of non-participants.

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Table 2
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Participants in the idea competition (n = 69) score higher on average on openness towards experience (mean = 4.0493) than non-participants (n= 157; mean = 3.4561). These results are significant at $p < 0.001$. Participants also have higher levels in extraversion (mean = 3.6377) compared to non-participants (mean = 2.9666, $p = 0.000$) and also have more faith in human nature since their dispositional trust values are on average significantly higher compared to those of non-participants (mean 3.5707 vs. mean 3.0661, $p < 0.001$). However, we did not find support for our hypothesis that participants in idea competitions are distinguished by higher trait competitiveness. Participants in the idea competition on average show higher trait competitiveness (mean = 3.2406) than members of the control group (mean = 3.1185), but these results are not significant at $p = 0.294$. Therefore, from the comparison of mean scores we can initially accept hypotheses 1 – 3, but we have to reject hypothesis 4.

Logistic regression

In a further attempt to determine the relative importance of personality dispositions for participants' entry decisions, we applied a binary logistic regression using SPSS. Table 3 summarizes the results. We chose a logistic regression analysis model due to the dichotomous character of the dependent variable of participation in a crowdsourcing competition (0 = non-participant, 1 = participant). The logistic regression models the probability of an individual belonging to the participants in a crowdsourcing competition, and can therefore be considered as a prediction model. We calculated the Variance Inflation Factors for all predictor variables in order to check for potential multi-collinearity problems. All VIF coefficients were below 1.5, thus multi-collinearity was not an issue in our analysis.

The Cox and Snell and Nagelkerke R-squared values are 0.271 and 0.382, respectively and indicate an adequate model fit. Using a cut-off value of 0.30 for the predicted probability, our model classifies 79.2% of the overall sample correctly, i.e. 71% of the participants and 82.8% of the non-participants. The ideal cut-off value is dependent on the size of the two groups - the commonly used cut-off value of 0.5 is recommended only if both groups are equally large (Efron 1975; Hosmer et al. 2013). A better and more complete description of classification accuracy is the ROC curve, which describes the discriminative power of the logistic regression model. Our concordance index, which is equivalent to the area under the ROC curve, shows a value of 0.832 and can therefore be considered as excellent discrimination.

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Table 3

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To test the significance of the individual variables we applied the Wald statistical test. The results of the logistic regression analysis indicate that the coefficients of openness, extraversion and trait competitiveness are significantly positive. Therefore, persons with higher scores on openness, extraversion and trait competitiveness are more likely to participate in crowdsourcing competitions than people with low scores on these dimensions. While the bivariate test showed significant differences in the level of dispositional trust, the parameters of the variable are not significant in the regression model. Thus, although participants score higher on the dimension of dispositional trust, this dimension has no additional predictive power in the decision model where other determinants are controlled. With respect to the control variables, we found that age has a significantly positive impact on an individual's decision to participate in a crowdsourcing competition, whereas educational level does not sufficiently discriminate between participants and non-participants. We also tested for potential interaction effects between the predictor variables and we found a significantly positive interaction between openness and extraversion. Thus, people who score high on openness and at the same time score high on extraversion are significantly more likely to participate.

Probability changes

A further indication of the relative importance of the predicting variables can be retrieved from the calculation of changes in the probability through adding or subtracting one standard deviation for the respective variable in comparison to the reference model where, ceteris paribus, the mean values for all other variables remain stable. In Table 4 we summarize the predicted changes in the probability of belonging to the group of participants vs. non-participants.

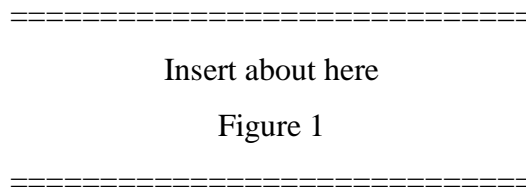
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Table 4

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For instance, if an individual's trait competitiveness is high (adding one SD to the mean) the probability of participation in a crowdsourcing competition increases from 24.1% in the reference model to 30%. Even more impressive are the changes in probability for openness. Subtracting one SD decreases the probability of participation from 24.1% to 16.7%, while adding one SD increases the probability to 33.4%. The effect of age is also remarkable. Changing the age from 31.6 years (mean) to 20 years cuts the probability of participation by almost half, from 24.1% to 12.8% whereas an age change to 40 years increases the probability to 35.7%. The strongest effect, however, we report for the interaction effect between openness and extraversion. Adding one SD on both dimensions increases the probability to participate from 24.1% to 56.4%. Figure 1 illustrates this effect.



Discussion and Managerial Implications

Crowdsourcing competitions have been introduced as powerful instruments to integrate users in new product development. Apparently, many users are motivated and willing to devote time and personal creativity in order to come up with an appropriate solution for the seeking company or broadcasting platform. While abundant research has investigated motives for participation, no evidence has been collected as to how individual differences rooted in personality dispositions may affect potential contestants' entry decisions. Our research aimed at closing this research gap, and we found that people with high scores in openness to experience, extraversion and trait competitiveness are more likely to participate in crowdsourcing competitions than their lower-scoring counterparts. Age also increases the likelihood of participation, whereas dispositional trust was not significant in the logistic regression model. Summarizing these findings, we conclude that there are two ways in which individual differences affect individuals' entry decisions: one is related to the ability to develop an appropriate solution and one to the willingness to expose oneself to a competitive situation. Openness to experience and age are those factors that seem to enhance the likelihood that people will be able to develop an appropriate solution at all. This is in line with research since openness has been related most strongly to creativity (Feist 1998) because open individuals are more

sensitive to new impressions, they like to solve complex problems and they like to experience new things. Also for new product development, openness has been shown to be a predictor for the ability of users to come up with creative solutions (Faullant et al. 2012). With increasing age, people also have a larger experience horizon and therefore are more likely to develop an appropriate solution. The second way in which personality influences the entry decision is that extraversion and trait competitiveness increase potential solvers' willingness to expose themselves with an idea to an unknown jury and to compete with others for the prizes on offer. Persons with high scores on extraversion are venturesome, assertive and like to involve others in what they are doing (Costa & McCrae 1992), while competitive people enjoy competition in work and game. Both traits favour participation in crowdsourcing competitions. Somewhat surprisingly, in our study dispositional trust does not represent a significant discriminator between participants and non-participants. It is possible that our competition setting did not require high levels of dispositional trust as the hosting parties to be trusted were a government and a university, both of which are probably considered highly trustworthy in any case. However, we do encourage investigating dispositional trust as a prerequisite in different competition set-ups, for example in virtual idea competitions where participants are also able to see and comment on others' ideas.

An interesting question that has already been raised by some scholars (King & Lakhani 2013) is whether the most creative people would indeed even be attracted to crowdsourcing competitions and whether they would actively participate in competitive situations (King & Lakhani 2013). We are not able to answer this question fully but our results suggest that those people who potentially have a wider solutions space will also be more likely to participate in idea competitions. In this sense our study supports those who advocate for introducing a competitive character in idea search. On the other hand, extraversion and trait competitiveness - two traits that discriminate between participants and non-participants – are traits that have not been linked to creativity. Thus, organizers of crowdsourcing competitions should be aware that the competitive character may tend to attract contestants who might not be so creative. Finally, we found positive interaction effects between these personality traits. People scoring high on openness but low on extraversion and trait competitiveness might still refrain from participating even if they were potentially able to develop a good solution. For managerial practice, it is important to know that some potentially creative people might be frightened off from contributing an appropriate solution just because of the fact that it is a competition. As a possible solution, solution seeking organizations intend to launch an idea competition could downplay the competitive element and employ smoother language (e.g. using the term “initiative” instead

of “competition”). Alternatively managers might be advised to engage in problem solving via collaborative communities (King and Lakhani, 2013), where the spirit of collaboration and joint development prevails. The main hurdle for this latter alternative though is the investment involved in launching and nurturing a firm’s own company-based community.

Limitations and Future Research

We are aware that our research is not without limitations. The participant and non-participant groups may differ significantly not only in terms of the investigated personality dispositions but also in other attributes or motivations which we did not capture in our survey. One consideration that relaxes this limitation is however the fact that personality dispositions remain relatively stable over the course of a lifetime after adulthood is reached (Loehlin et al. 1998). Thus, even if participants and non-participants may differ in terms of several other - to our study unknown attributes we are confident in reporting that differences in personality dispositions are indeed a distinguishing element in users’ entry decisions for crowdsourcing competitions.

This argument can be extended further by looking into intrinsic and extrinsic motivational factors. Terwiesch and Xu (2008) considered that with an increasing number of participants competitors will reduce their personal effort as their individual chance of winning the prize decreases. Participants in our study did not know how many others would submit a solution because the crowdsourcing competition was not carried out via an interactive platform. Nonetheless, it is possible that the decision to enter an idea competition is shaped by both personality effects and motivational factors, and we cannot separate these effects. These would, however, be interesting questions for future research, i.e. whether personality traits interact with incentive structures and whether there are individual monetary incentive thresholds for overcoming participation reluctance.

We also questioned whether crowdsourcing competitions are able to attract the most creative people. So far we have been able to demonstrate that some people refrain from participating in the first place because of their personality dispositions. We do not know however whether non-participants would indeed come up with better solutions if they were invited to do so in a non-competitive situation. To this end, future research should compare the quality of ideas which emerge out of an idea competition to the quality of ideas elaborated on the same topic by non-participants.

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Table 1 Descriptive statistics

	M (SD) n=226
<i>Openness</i>	
I am interested in many things.	4.29 (1.029)
I am profound, I think about things.	3.80 (1.029)
I do have an active imagination, I am imaginative.	3.79 (1.150)
I appreciate artistic and aesthetic impressions.	3.46 (1.269)
I am not really interested in art. (reverse-scored)	2.85 (1.426)
	Cronbach's α 0.743
<i>Extraversion</i>	
I am rather reserved. (reverse-scored)	2.75 (1.051)
I am enthusiastic and I can easily sweep others away.	3.65 (0.988)
I am a rather silent person, not very talkative. (reverse-scored)	2.75 (1.280)
I am outgoing and sociable.	3.54 (1.033)
	Cronbach's α 0.711
<i>Dispositional Trust</i>	
With respect to the intentions of others I am rather cynical and skeptical. (reverse-scored)	2.98. (1.168)
I believe that most people have good intentions.	3.39 (1.019)
I believe that most people will take advantage of you, if you let them. (reverse-scored)	2.84 (1.100)
I believe that most people that I am in touch with are honest and trustworthy.	3.73 (0.976)
I am suspicious if somebody is doing me a favor. (reverse-scored)	3.04 (1.465)
My first reaction is to trust people.	3.21 (1.154)
I tend to assume the best about people.	3.39 (1.010)
I have a good deal of faith in human nature.	3.18 (1.049)
	Cronbach's α 0.825
<i>Trait competitiveness</i>	
I enjoy working in situations involving competition with others.	3.15 (1.081)
It is important to me to perform better than others on a task.	3.45 (1.041)
I feel that winning is important in both work and games.	3.19 (1.093)
It annoys me when other people perform better than I do.	2.73 (1.197)
I try harder when I am in competition with other people.	3.26 (1.141)
	Cronbach's α 0.772

Table 2: Results of the group comparison

	Group 1: Participants	Group 2: Non-participants	Significance Tests
	M (SD) (n = 69)	M (SD) (n = 157)	F-Value (p-Value)
<i>Openness</i>	4.0493 (.9967)	3.4561 (.68344)	7.020 (0.000)
<i>Extraversion</i>	3.6377 (.85054)	2.9666 (.68646)	5.569 (0.000)
<i>Dispositional Trust</i>	3.5707 (.73405)	3.0661 (.71493)	.005 (0.000)
<i>Trait Competitiveness</i>	3.2406 (.80847)	3.1185 (.80191)	0.217 (0.294)

Table 3: Results of the logistic regression analysis

<i>Variables</i>	<i>Beta</i>	<i>S.E.</i>	<i>Wald</i>	<i>Sig.</i>	<i>Exp(B)</i>
<i>Openness</i>	0.545**	0.255	4.556	0.033	1.742
<i>Extraversion</i>	0.464*	0.268	3.002	0.083	1.591
<i>Dispositional trust</i>	0.173	0.281	0.377	0.539	1.188
<i>Trait competitiveness</i>	0.372*	0.225	2.747	0.097	1.451
<i>Openness x Extraversion</i>	0.608**	0.253	5.757	0.016	1.836
Age	0.066***	0.017	15.437	0.000	1.069
Education	-0.249	0.409	0.369	0.544	0.780
Constant	-3,248	0.566	32.906	0.000	0.039
Number of observations	226				
-2 Log likelihood	206.794				
Cox and Snell R-square	0.271				
Nagelkerke R-square	0.382				
ROC:	0.832				
Correct cases classified:	Participants		Non-participants		Overall sample
Cut-value: 0.3	71%		82.8%		79.2%

Notes: Binary logistic regression with dependent variable: participation in a crowdsourcing competition

0 = 'non-participants' and 1 = 'participants'

Level of significance: *p < 0.10, **p < 0.05 and ***p < 0.01

Table 4: Changes in the probability to participate in a crowdsourcing competition

	<i>Participant</i>	<i>Non-participant</i>
<i>Reference Model</i>	24.1%	75.9%
University degree (Yes)	19.8%	80.2%
Age (20 years)	12.8%	87.2%
Age (40 years)	35.7%	64.3%
Openness (mean -SD)	16.7%	83.3%
Openness (mean +SD)	33.4%	66.6%
Extraversion (mean - SD)	17.9%	82.1%
Extraversion (mean + SD)	31.5%	68.5%
Dispositional trust (mean - SD)	21.8%	78.2%
Dispositional trust (mean + SD)	26.6%	73.4%
Trait competitiveness (mean -SD)	19.0%	81.0%
Trait competitiveness (mean + SD)	30.0%	70.0%
Openness x Extraversion (mean – SD)	19.8%	80.2%
Openness x Extraversion (mean + SD)	56.4%	43.6%
Openness (mean + SD) x Extraversion (mean – SD)	21.4%	78.6%
Openness (mean – SD) x Extraversion (mean + SD)	18.8%	81.2%

Figure 1: Plotted changes in the probability interaction effect openness x extraversion

