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Motivations of crowdsourcing contributors

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Abstract

Purpose – This study aimed at analyzing the factors that induce the intention of contribution by participants in crowdsourcing initiatives.

Design/methodology/approach – This study is an explanatory investigation using a quantitative approach. In the second stage, an exploratory study was carried out. Data were obtained through online questionnaires available to the contributors of two platforms, and results were obtained from a regression analysis.

Findings – The results revealed a greater importance given by participants to intrinsic motivational factors (learning, fun and satisfaction) compared with the extrinsic motivational factor (acknowledgment). Monetary rewards proved irrelevant in this process, whereas attitude and self-efficacy proved good predictors of the intention of contribution in crowdsourcing initiatives.

Originality/value – No study, as far as the authors' knowledge extends, has been undertaken to understand what motivations are more relevant in the context of crowdsourcing platforms using multiple theories.

Keywords Innovation, Crowdsourcing, Crowdsourcing contributors,
Intrinsic and extrinsic motivations, Planned behavior theory

Paper type Research paper

Introduction

If for much of the twentieth century, the organizational structure was tightly closed and rigid, today, traditional companies coexist with those of flexible, open and dynamic structure (Chesbrough, 2003). Reflecting the emergence of phenomena such as innovation through customers and communities, known as open innovation, open source and co-creation the thought that the most creative people are not always available in the company's internal environment, but still can be harnessed, diffuses increasingly (Kaufman and Roza, 2013).

Thus, the need arises to seek inputs on non-traditional sources: employees, partners, customers, common people. Even competitors become possible collaborators and the innovation possibilities multiply (Terwiesch and Xu, 2008).

The proven success of open source industry enabled innovative companies such as Threadless (www.threadless.com), InnoCentive (www.innocentive.com) and Topcoder (www.topcoder.com)[1] to see in the people geographically separated but connected through the internet, an opportunity to innovate. Even before the appearance of this term in 2006[2], those were the creators of crowdsourcing, a participatory culture phenomenon that seeks to use the potential of a crowd to create content, generate ideas and contribute to the labor force, thus, generating real benefits for organizations (Brabham, 2013).

Contributors in crowdsourcing initiatives generally do not receive or receive little for their collaboration (Howe, 2008). Diverging drastically from the traditional organizational structure, where money is an important motivational factor, contributors are motivated more by intrinsic motivations that come from carrying out the activity itself than by extrinsic motivations, that depend on external stimuli (Kaufmann *et al.*, 2011; Zheng *et al.*, 2011).

No study, as far as our knowledge extends, has been undertaken to understand what motivations are more relevant in the context of crowdsourcing platforms using multiple theories. Therefore, a further deepening of the theme can contribute to the understanding of the factors influencing the contribution of the participants in crowdsourcing, and to the popularization of this practice among companies, which will be safer, as they will get to know the dynamics of participation of contributors. That said, we sought to identify the influence of motivation in the intention of contribution by participants in crowdsourcing platforms.

Crowdsourcing

The term crowdsourcing, neologism formed by the words "crowd" and "outsourcing", was first used by Howe (2006). Crowdsourcing is an online method of problem-solving and production, which potentiates the collective intelligence of crowds to serve specific organizational objectives. In this context, the control of the creative production of goods and ideas exists in both the company and the public (Brabham, 2013).

This definition, in spite of meeting the objectives of this study, it is not widely recognized in the literature on the subject. Estellés-Arolas and González-Ladrón-de-Guevara (2012), when conducting extensive literature review, found the existence of 40 different definitions of what crowdsourcing is. To unify the efforts of researchers, the authors developed an integrated definition: crowdsourcing is a type of online participatory activity in which an individual, an institution, a non-profit organization or company proposes to a group of individuals via an open call, voluntary commitment to a task. The completion of the task always implies mutual benefit. The user will get the satisfaction of a given need, while the organizer of the initiative will obtain and use what the user brought as a contribution for his own benefit.

In general, despite the fact that call structure and rewards offered vary according to company and activity, crowdsourcing always follows the following guidelines: the organization identifies an activity, which it does not intend to carry out in-house, opens the call on a platform on the internet (whether via their own or intermediate website) and sets out the terms of participation of the crowd (Pénin and Burger-Helmchen, 2011). While many individuals will work simultaneously on a given project, the organizer will possibly choose the result that best fits his needs, and will only pay for those products or services that meet his expectations (Schenk and Guittard, 2011).

The probability that a company chooses to use crowdsourcing to solve a problem is greater when the problem is easy to design and broadcast to the crowd; the knowledge required to solve the problem is beyond the internal knowledge; the crowd is large, with

some members motivated and having enough knowledge to select and solve the problem; the final solution is easy to be evaluated and integrated in the value chain and information technology has low cost and is present both in the environment that includes the company and in the crowd (Afuah and Tucci, 2012).

For Administration Science, the greatest benefit of studying the use of crowdsourcing by companies is to understand the differences between this method of problem-solving and the traditional organizational models. Firms are relatively well coordinated to build and mobilize expertise to solve problems and take advantage of opportunities for innovation. In contrast, the crowd, loose and decentralized, has individuals with varied skills, experiences and perspectives and can operate on scales that exceed even the largest and most complex organizations. While the coordination of collective effort can represent a challenge for managers, at times, it can solve problems more efficiently (Boudreau and Lakhani, 2013).

Motivations in crowdsourcing

Being motivated means to be driven to do something, and a person who does not feel inspired to act is characterized as unmotivated, while someone who is energized for a particular purpose is considered to be motivated (Deci *et al.*, 1998). Self-Determination Theory distinguishes between different types of motivations based on different reasons or goals that lead to action. The basic distinction is between intrinsic motivations, when the individual does something because it is inherently interesting and extrinsic motivations, related to the execution of something because it generates a separate result (Deci and Ryan, 1985).

The objectives of the articles dealing with motivations in crowdsourcing context were to identify what factors motivate users to participate in platforms (Brabham, 2010; Kaufmann *et al.*, 2011; Battistella and Nonino, 2012) and to relate performance as a result of the motivations (Lakhani *et al.*, 2007, Frey *et al.*, 2011). Moreover, other objectives were to investigate the role of fair expectations in the initial decision to contribute (Franke *et al.*, 2013) and to understand the relationship between motivation and sustained participation of users (Sun *et al.*, 2012).

The main extrinsic motivations identified that influence participation were monetary rewards and acknowledgment, and the main intrinsic motivations were satisfaction, fun and learning. For this work, it is considered initially that these also influence the intention of contribution by participants in crowdsourcing platforms.

Intention of contribution

Before analyzing the motivations, it is necessary to consider the variables preceding the intention of contribution. One of the theories most used in the literature for this purpose is the Theory of Planned Behavior, extension of the Theory of Reasoned Action, which considers the behavior in which people do not have full voluntary control. The Theory of Planned Behavior is mainly focused on measuring the intention by the individual of practicing certain behavior, that is, how willing he is and how much effort he intends to put in. As a general rule, it is understood that the more one is intended to act in a certain way, the more likely it is that this behavior materializes (Ajzen, 1991).

Attitude

Attitude is the degree to which a person considers certain behavior as being favorable or unfavorable (Ajzen, 1991). In general, the more positive the attitude toward the behavior, the greater must be the intention of the individual to practice it (Armitage and Conner, 2001).

In a study by Brabham (2010), it was found that the participants of Threadless crowdsourcing platform intended to contribute to the production of content because they felt nice being part of a creative community.

Thus, it is suggested that:

H1. Attitude positively influences the intention of contribution of the participants.

Perceived behavioral control

Perceived behavioral control refers to the ease or difficulty perceived of practicing certain behavior and reflects past experience and anticipated obstacles (Ajzen, 1991).

The notion of perceived behavioral control derives directly from the concept of self-efficacy (Ajzen, 1985). Self-efficacy refers to the ability perceived by a person to perform certain tasks, and is considered the central cognitive mediator of the motivational process (Bandura, 1997).

Fishbein and Cappella (2006) developed integrated model to measure intent, which considers all the elements of the Theory of Planned Behavior, but replacing the perceived behavioral control variable by the self-efficacy variable.

When studying the motivations of contributors in crowdsourcing platforms, it seems interesting to consider also this replacement, as the intention is directly related to the perceptions by contributors of the degree to which they have competence to perform online tasks (Sun *et al.*, 2012).

Thus, it is believed that:

H2. Self-efficacy (perceived behavioral control) positively influences the intention of contribution of the participants.

Monetary rewards

Most working people have to make money. Therefore, it seems to be interesting to use monetary rewards as a core motivational strategy in the organizational context (Gagné and Deci, 2005). For workers, money is almost always the means to an end, enabling to satisfy instrumental, basic and accessory needs (Frey and Osterloh, 2002).

In crowdsourcing platforms, monetary rewards are recognized as important motivations in the effective participation of contributors (Brabham, 2008; Lakhani *et al.*, 2007). The financial factor is also indicated as having a strong influence on the time spent by users on the platform (Hars and Ou, 2001; Kaufmann *et al.*, 2011).

Thus, it is suggested that:

H3. The motivation driven by monetary rewards positively influences the intention of participation of contributors.

Acknowledgment

The expectation of acknowledgment is an important motivation to enable the participation of users in virtual platforms (Jeppesen and Frederiksen, 2006; Battistella and Nonino, 2012). In competition of ideas or broadcast search, contributors expect, when demonstrating their skills, abilities and competencies, positive responses from other participants and from the company organizing the competition (Leimeister *et al.*, 2009).

Leimeister *et al.* (2009) found that the acknowledgment by the firm organizing the competition is more important from the motivational standpoint than peer acknowledgment.

This can be explained by the fact that the participants wish to be mainly acknowledged by the "right" people, in this case, the organizers. Such acknowledgment can take many forms, from the dissemination of user-generated innovation to receiving feedback during or after the innovation process (Jeppesen and Frederiksen, 2006).

Thus, it is believed that:

H4. The motivation driven by the acknowledgment of the peers and the organization positively influences the intention of contribution of the participants.

Fun and satisfaction

When intrinsically motivated, a person is driven by the fun or challenge involved in the task and not by pressure or external rewards (Ryan and Deci, 2000). Especially in innovative and creative activities, such as those often demanded in crowdsourcing platforms, intrinsic motivations tend to be crucial (Frey and Osterloh, 2002).

Sometimes simple contentment in performing a task can be an important motivational factor, especially when that work does not in fact seem to be work. Interesting self-determined or intellectually challenging tasks can trigger massive participation of contributors, mainly when they feel a belonging to a higher cause (Boudreau and Lakhani, 2009).

According to Lakhani *et al.* (2007), in the innovation platform InnoCentive, the troubleshooters are motivated to participate for the simple satisfaction in solving complex scientific issues and being challenged. The authors also found that the probability of winning a competition is positively related to these motivations.

Thus, it is suggested that:

H5. The motivation driven by satisfaction and fun positively influences the intention of contribution of the participants.

Learning

The motivation regarding learning can be in two ways: exploratory learning, when trying to find new ways to perform activities or overcoming existing problems; and learning by doing, when seeking to learn in the course of carrying out the activities. Both may also occur simultaneously (Ye and Kishida, 2003).

In an innovation platform, exploratory learning is an important motivational factor. In InnoCentive, for example, Lakhani *et al.* (2007) found that the contributors are driven by the desire to solve complex and challenging scientific problems. Thus, they can apply their skills in a meaningful context (Brabham, 2010).

Similarly, as part of the competition, the contributors can be motivated by learning by doing, because when receiving feedback from organizers and other participants about the idea submitted, they can modify it, thus learning from experience (Leimeister *et al.*, 2009). That said, it is believed that:

H6. The motivation driven by learning positively influences the intention of contribution of the participants.

Considering the hypotheses raised above, we propose below an explanatory model of the intention of contribution of participants in crowdsourcing modalities:

Research method

This study is an explanatory research using a quantitative approach. In the second stage of this work, an exploratory study was carried out. The data are characterized as primary.

For this study, two platforms were selected. The decision to study more than one platform was taken to give greater validity to the results, because the motivations of contributors found in different scenarios can better predict the motivations in crowdsourcing platforms as a whole.

The platform choice was based on the criteria of geographical location, offered incentives and user base. Both platforms are based in Brazil, they offer monetary rewards and have a broad user base. From a search conducted in the directory of websites of crowdsourcing portal (www.crowdsourcing.org), the largest of its kind, Battle of Concepts (www. battleofconcepts.com.br) and ItsNOON (www.itsnoon.net) were selected.

Battle of Concepts is a platform where companies seek innovative solutions to their problems. Calls are then opened to university students or professionals aged up to 30 years distributed throughout Brazil. The tasks, also known as battles, consist of key questions for solving organizational problems, which should be answered until a given deadline. At the end of the competition the best idea is chosen and rewarded.

In ItsNOON platform, companies launch challenges and people from anywhere can collaborate with creative content. The large amount of contributions, which can be sent in various formats such as text, audio and video, provide information that can generate insights and rich content to be used by organizations. The selected contributors, in turn, may receive financial incentives and feedback from both companies and other users.

Research instrument

Data were obtained through online questionnaires available to the contributors of the two platforms. The disclosure, made directly to users by convenience, aimed at identifying motivations that reflect their intention to contribute in any posted job. Data were collected from August 22, 2014 to October 18, 2014.

The questionnaire consists of 28 items. The first four questions identify the profile of respondents; items 5-12, from the Theory of Planned Behavior, deal with aspects regarding the intention of contribution of participants, the intention alone, attitude and perceived behavioral control. Items 13, 14, 15, 16, 17 and 18 are related to the extrinsic motivations: monetary rewards and acknowledgment, while items 19, 20, 21, 22, 23 and 24 refer to the intrinsic motivations: fun and satisfaction and learning.

Responses were obtained using the Likert scale, on a scale ranging from one, for total agreement, to five, for disagreement. By means of a feature present in the search platform, respondents had the option to choose any position between one and five, even if it was equivalent to a decimal number.

For the validation of the items, a pretest of the questionnaire was performed with two participants from each platform chosen by convenience.

It is noteworthy that for the analysis of results, items relating to the same construct were grouped, and the simple average of these was calculated to obtain a representative single value, when the most recommended would be calculation by factor analysis.

The data, recorded in an online database, were exported directly to treatment through IBM SPSS 20 software. Bivariate correlations were used to identify the relations between the

model variables and multiple linear regression was used to check if there was a significant correlation between the independent variables and the dependent variable.

Sample description

Considering the two platforms, a total of 214 respondents was obtained, 107 of which from ItsNOON platform and 107 from Battle of Concepts platform.

Table I shows the characteristics of responders in each of the platforms, while Table II presents the averages and correlations of the variables:

Sample Characteristics (N = 214)						
Itsnoon (n = 107)			Battle of concepts (n = 107)			
Feature	Qty.	(%)	Feature		Qty.	(%)
Sex						
Male	58	54	Male		62	58
Female	49	46	Female		45	42
Age						
Up to 18 years	12	11	Up to 18 years		1	1
From 19 to 25 years	39	36	From 19 to 25 years		80	75
From 26 to 30 years	19	18	From 26 to 30 years		17	16
From 31 to 40 years	19	18	From 31 to 40 years		8	7
Over 40 years	18	17	Over 40 years		1	1
Education						
Fundamental Education	3	3	Fundamental Education		0	0
Incomplete Middle Education	5	5	Incomplete Middle Education		1	1
Middle Education	14	13	Middle Education		2	2
Incomplete Higher Education	39	36	Incomplete Higher Education		63	59
Higher Education	36	34	Higher Education		26	24
Graduate School	10	9	Graduate School		15	14
Current occupation						
Student/intern	27	25	Student/intern		50	47
Job in the public sector	11	10	Job in the public sector		5	5
Job in a private company	15	14	Job in a private company		27	25
Job in a third-sector organization	3	3	Job in a third-sector organization		0	0
Freelancer	10	9	Freelancer		3	3
Autonomous	22	21	Autonomous		12	12
Unemployed	8	7	Unemployed		4	4
Other	11	10	Other		6	6

Table I.
Sample characteristics

Variable	Average	SD
Intention	3.6148	1.44069
Attitude	4.3657	0.86055
Self-efficacy	3.9457	0.80354
Monetary Rewards	3.3306	1.00253
Acknowledgment	3.6754	1.19981
Fun and Satisfaction	4.3527	0.82143
Learning	4.0569	0.9788

Table II.
Averages and standard deviations

Bivariate correlations

To verify the validity of the hypotheses presented in Figure 1, at first, only the direct effects between variables were explored. Thus, Pearson's statistical test was used to calculate the Pearson product-moment for each pair of variables. Integrated data from both platforms were taken into account.

As shown in Table III, there was a statistically significant correlation between some variables, which could indicate the partial validity of the model. The attitude variable presents significant correlation with all other variables except monetary rewards. Regarding the intention variable, the highest correlation was found with attitude, with which it has a moderate correlation. It has weak correlation with acknowledgment, fun and satisfaction
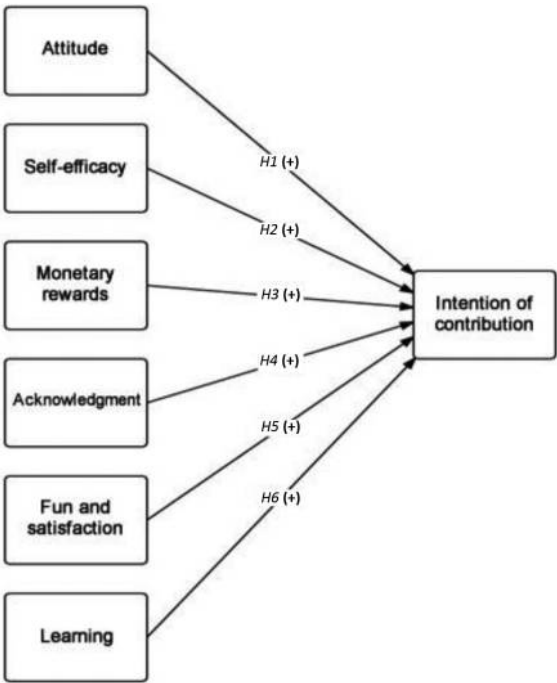

Figure 1.
Variables influencing the intention of contribution of participants in crowdsourcing modalities

Variable	Intention	Attitude	Self efficacy	Correlations Monetary rewards	Acknowledgment	Fun and satisfaction	Learning
Intention	1	–	–	–	–	–	–
Attitude	0.44 **	1	–	–	–	–	–
Self-efficacy	0.19 **	0.21 **	1	–	–	–	–
Monetary Rewards	−0.01	0.02	0.19 **	1	–	–	–
Acknowledgment	0.25 **	0.35 **	0.11	0.1	1	–	–
Fun and Satisfaction	0.3 **	0.4 **	0.18 **	0	0.32 **	1	–
Learning	0.3 **	0.4 **	0.18 **	−0.16 *	0.33 **	0.48 **	1

Notes: Obs.: N = 214; **$p < 0.010$; *$p < 0.050$

Table III.
Correlations between variables

and learning and very weak correlation with self-efficacy. There was no significant correlation between intention and monetary rewards.

Results

After the Pearson's statistical test, a multiple regression statistic test was carried out, which estimated coefficients for the intention variable from the other six variables, attitude, self-efficacy, monetary rewards, acknowledgment, fun and satisfaction and learning. The proposed model was able to explain 23.3 per cent of the intention of contribution based on independent variables, as shown in Figure 1.

Table IV, below, shows the results of the multiple regression performed, while Figure 2 shows the hypotheses and their respective results represented by the estimated regression coefficient and the statistical significance of each one.

At a confidence level of 95 per cent, only attitude showed statistical significance and can be considered a predictor of the intention of contribution (the first hypothesis was confirmed).

For other variables, it was found that self-efficacy does not positively influence the intention of contribution (it does not accept the second hypothesis). Similarly, the motivation by monetary rewards does not favor intention and even has a negative coefficient (it does not accept the third hypothesis). Motivation driven by acknowledgment also is not a good predictor of intention (it does not accept the fourth hypothesis). Motivation driven by fun and satisfaction, has no relation to the intention of contribution of participants (it does not accept the fifth hypothesis). Featuring the same result of the above variables, learning does not positively influence the intention of contribution (it does not accept the sixth hypothesis).

Exploratory model

From the results, it is noted that attitude shows itself as the best predictor of intention of all other variables. In contrast, self-efficacy, although not having the required level to be considered statistically significant, is notably acknowledged as a predictor of the intention of contribution by the Theory of Planned Behavior, which makes us raise the question whether it was not the proposed configuration for the model that disproved the result of such variable.

Significant correlation between attitude and motivational variables, in turn, suggest that in crowdsourcing platforms, motivations would take the place of the behavioral beliefs, and the participant would assess, based on his motivations, how much each platform could meet his wishes, and thus would form a positive or negative attitude toward the intention of contribution.

Independent variables	Coefficients	Hypothesis
Attitude	0.55 *** (*H1*)	Accepted
Self-efficacy	0.16 (*H2*)	Rejected
Monetary rewards	−0.05 (*H3*)	Rejected
Acknowledgment	0.01 (*H4*)	Rejected
Fun and Satisfaction	0.16 (*H5*)	Rejected
Learning	0.1 (*H6*)	Rejected

Notes: Considering intention as the dependent variable; $N = 214$; ** $p < 0.010$

Table IV.
Multiple regression results
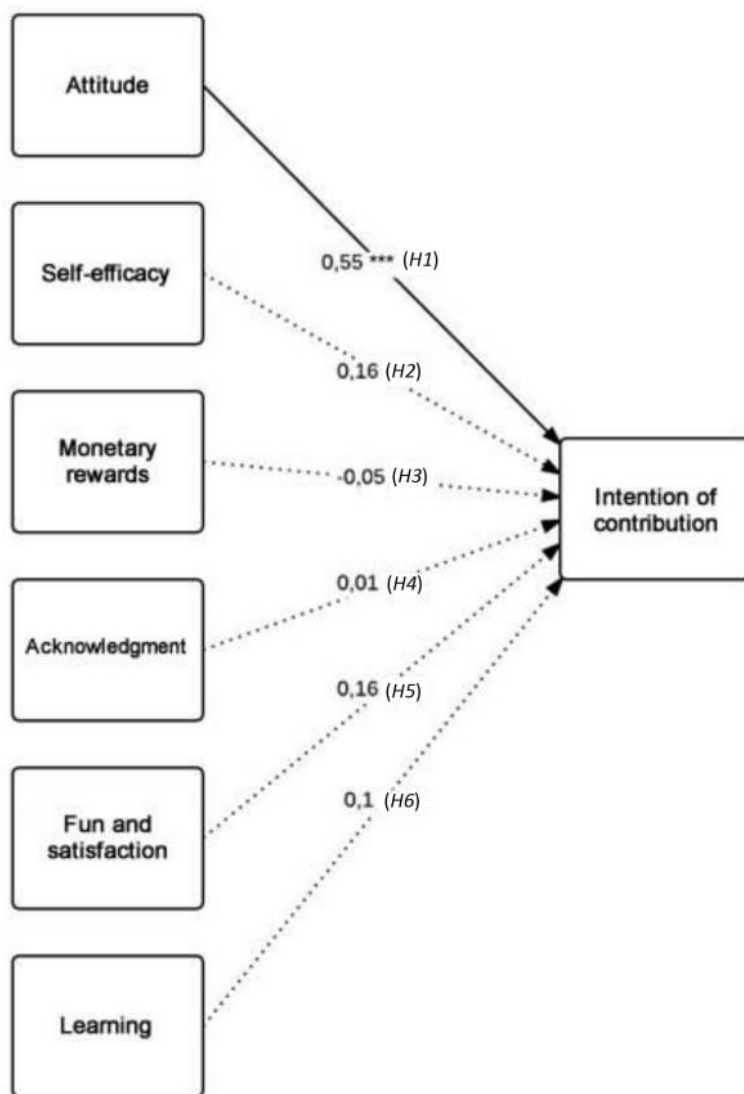
Notes: N = 214; ***$p < 0.001$; **$p < 0.010$; *$p < 0.050$; ^$p < 0.100$

Figure 2.
Calculated effects

In other words, the highly-motivated participant, either by extrinsic or intrinsic motivations, would assess his contribution to the platform as favorable, generating a positive attitude and therefore he would be more intended to contribute. The opposite would also be true, because the unmotivated or little motivated participant would assess his contribution to the platform as unsatisfactory.

That said, the possibility that there would be a more appropriate model to meet the objectives of the study is proposed. In the proposed exploratory model, attitude and self-

efficacy would be immediate predictors of intention of contribution, while extrinsic and intrinsic motivations would act as factors immediately influencing the attitude.

Thus, it is believed that the exploratory model has a greater power to explain intention of contribution than the initially proposed model, because it does not consider all the variables, including the ones from different theoretical bases, as immediate predecessors of intention, but divides them in layers according to the expected impact on each of the dependent variables, that is, attitude and intention (Figure 3 and Table V).

In the exploratory model, at a confidence level of 95 per cent, only the monetary rewards variable has no statistical significance, which means that there is no statistical evidence of the relation between the variables attitude of contributors and motivation based on financial incentives (the third hypothesis is rejected).

Attitude has statistical significance with intention, standing out again for being a predictor of this variable (the first hypothesis is confirmed). Self-efficacy also presents statistical significance regarding intention (the second hypothesis is confirmed).
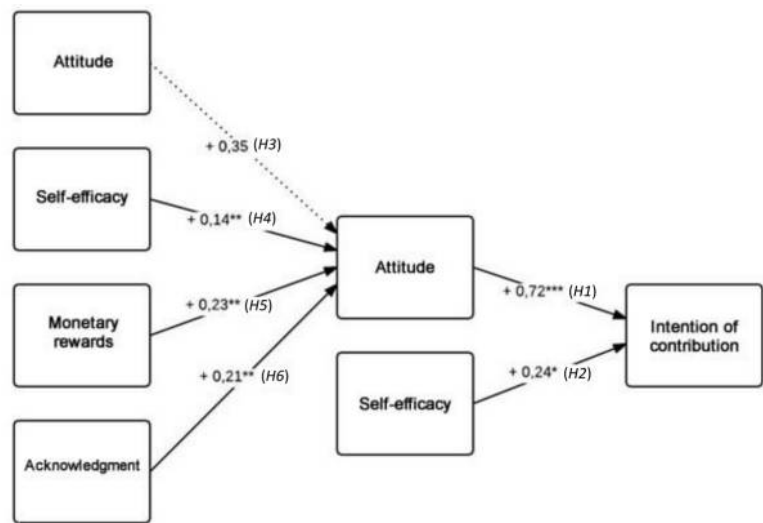

Figure 3.
Calculated effects –
exploratory model

Notes: $N = 214$; $***p < 0.001$; $**p < 0.010$; $*p < 0.050$; $^\wedge p < 0.100$

Independent variables	Dependent variable	Coefficients	Hypothesis
Attitude	Intention	0.72 *** (*H1*)	Accepted
Self-efficacy		0.24 * (*H2*)	Accepted
Monetary rewards	Attitude	0.35 (*H3*)	Rejected
Acknowledgment		0.14 ** (*H4*)	Accepted
Fun and Satisfaction		0.23 ** (*H5*)	Accepted
Learning		0.21 ** (*H6*)	Accepted

Notes: $N = 214$; $***p < 0.001$; $**p < 0.010$; $*p < 0.050$

Table V.
Regression results –
exploratory model

Regarding the motivations, learning was the variable with the highest power to explain attitude, indicating that the valorization of this attribute by the participants directly influences their attitude (the sixth hypothesis is confirmed). Fun and satisfaction have statistical significance and also favors attitude (the fifth hypothesis is confirmed). Having a less explanatory power than the previous variables, motivation driven by acknowledgment also positively influences the attitude of the participants (the fourth hypothesis is confirmed).

Conclusions

The model studied shed light on aspects that had not been dealt with by the literature on crowdsourcing yet. The most important of them was the close relationship found between attitude and intention of contribution, which is according to the Theory of Planned Behavior, for which the more a behavior (or intention) is considered favorable for the individual the greater are the chances of it to be performed (Ajzen, 1985).

In the first regression analyzed, all hypotheses were rejected except the one claiming that attitude positively influences the intention of contribution by participants, which completely diverges from much of the literature that deals with motivations in crowdsourcing platforms, to which extrinsic and intrinsic motivations have a determining effect on the intention of contribution of participants (Brabham, 2010; Kaufmann *et al.*, 2011; Zheng *et al.*, 2011).

On the other hand, significant bivariate correlations were found in the first test, where the effects between each pair of variables were dealt with in isolation, even among the motivational variables and intention. Thus, it is assumed that the results found in the regression are due to the attitude variable, which seems to strongly explain intention, thereby nullifying the effects of other variables.

By proposing an exploratory model based on discoveries made, promising results were found. Motivations that had not yet been considered in the literature on the Theory of Planned Behavior, acknowledgment, fun and satisfaction and learning, proved to be good predictors of the Attitude of the contributors. In future studies, researchers that use Theory of Planned Behavior as a theoretical basis could confirm the influence also of the motivations in attitude, rather than only considering the behavioral beliefs, as the practice of the literature. Moreover regarding the model, attitude and self-efficacy, in turn, were able to satisfactorily explain the intention of contribution.

In this new scenario, all the motivations, except monetary rewards are positively related to attitude, with the intrinsic motivations, learning and fun, being more relevant than the extrinsic motivation, acknowledgment. This means that the contributors are mainly driven by intrinsic motivations in the tasks (Kaufmann *et al.*, 2011;. Zheng *et al*, 2011).

A finding that appears consistently in both proposed models, is that the money does not exercise significant role in the intention to contribute (Leimeister *et al*, 2009; Zheng *et al.*, 2011). Prpić *et al.* (2014) when studying the impact of the cultural factor in the motivations of participants from different geographic regions in crowdsourcing competitions reached similar results. According to the authors, monetary rewards might even repel the participation of contributors in Brazil.

The implications of the findings for the organizers of the platforms, or even for companies that wish to integrate the method to their processes, apply mainly to the available tasks. Whereas the way in which the tasks are planned have a positive impact on perceived incentives, activation and hence the decision to participate in crowdsourcing platforms (Leimeister *et al.*, 2009), it is proposed that the tasks are planned in such a way the contributors feel accomplished in the course of their execution and have a clear perception of

being learning something with the process, which could be enhanced by offering continued feedback about their performance after they send their contributions. It is also recommended that as much information as possible be provided about what is desired so that contributors feel safe that they are able to perform the challenges.

Despite these interesting and surprising results, there were several limitations to this study. First, we selected only Brazilian platforms, significantly limiting the scope and applicability of the results. Moreover, not all categories of crowdsourcing has been contemplated. The type of statistical analysis used, that is, the multiple linear regression, is not the only alternative to the testing of hypotheses. Another point to consider is the size of the sample, which may not reflect the size of the phenomenon if the total number of users on the respective platforms is analyzed. Finally, because of the high correlation between the variables, it is possible that there is a multicollinearity problem.

To overcome these limitations, we can, in future studies, apply the model proposed here for other platforms, including other categories of crowdsourcing. Other variables could also be considered, such as time available to contribute, self-expression, creative potential and willingness to collaborate. Regarding the statistical technique, future studies may consider alternative methods such as structural equation to contribute to better understanding of the assumptions made here. Also, the execution of statistical tests is recommended to check the possibility of multicollinearity when verifying the stability of the coefficients used in hypothesis testing.

Finally, we must consider the possibility that the initially proposed model is correct. Such a scenario would indicate that the study of extrinsic and intrinsic motivation is not compatible or sufficient to explain the intention to participate in crowdsourcing platforms, with the suggestion that other motivational theories be used to try to explain the phenomenon. So knowledge not only of psychological aspects of the contributor, but also of the method as a whole would be expanded. Future research may also seek such validation.

Notes

1. Respectively, a company that sells t-shirts designed by their own users, an innovation competition platform and a competitive programming platform.

2. Howe (2006).

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