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Crowdsourcing in Video Games: The Motivational Factors of the Crowd

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Abstract Crowdsourcing is *the act of issuing a voluntary task to a large network of people*. There have been several successful implementations of crowdsourcing in the video games industry, one of which is presented in this paper: Steam Workshop—a digital platform allowing players to publish self-made content for games. Building on an all-encompassing definition of crowdsourcing, the paper defines Steam Workshop as a crowdsourcing platform and answers the question: What are the motivational factors for participants to contribute to crowdsourcing projects? Through a literature review on the subject of motivation in crowdsourcing, a total of 25 motivational factors are identified and divided into three categories: intrinsic motivators, extrinsic motivators and social motivators. These factors may be used by developers in order to evaluate and improve the motivational factors behind participation in crowdsourcing projects, and thereby also the quality and quantity of contributions. In future research, crowdsourcing projects should be categorized according to a determined set of characteristics, thereby allowing research into which motivational factors are more prominent for each form of crowdsourcing. Secondly, further research could help explain how motivation varies over time, and how developers may not only capture contributors, but also retain them through time-appropriate incentives.

Keywords Crowdsourcing · User-generated content · Motivation · Steam workshop

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1 Introduction

This paper aims to define the motivational factors that impact contributions to crowdsourcing platforms, and then tie them to an exemplary case in the video games industry. Crowdsourcing may be defined as *the act of issuing a voluntary task or challenge to a large network of people*. With the adoption of the Internet, companies are increasingly utilizing crowdsourcing in order to improve their innovation potential and competitiveness. They promote collaborative approaches with different external networks, such as scientists, experts, customers, suppliers, stakeholders, and competitors (Battistella and Nonini 2012). Crowdsourcing has become a popular phenomenon with many successful implementations, such as Wikipedia, iStockPhoto (Howe 2006), Kickstarter (Kickstarter 2016) and Threadless (Brabham 2010). The video games industry is no exception, and has experienced successful crowdsourcing of game funding, voting and content creation. Prominent examples include the funding of games through Kickstarter (Kickstarter 2016), voting on games in Steam Greenlight (Dean 2013), and content creation in Steam Workshop (Valve Corporation 2015a, b).

In order to maximize the participation level of potential contributors and the quality of their contributions, it is important to recognize and understand the factors that motivate individuals to get involved in the undertaking (Brabham 2010; Tokarchuk et al. 2012; Hammon and Hippner 2012; Gan et al. 2012). The purpose of this paper is to review and summarize the various motivational factors for participation that have been brought up in existing literature on crowdsourcing and similar practices, so that game developers and other stakeholders in the video game ecosystem may use them to their benefit.

However, academic case study and literature on video game-related crowdsourcing is extremely limited, despite the popular and successful trend of crowdsourcing in the industry. Before any academic learnings from crowdsourcing can be applied to video game projects, it must first be established that crowdsourcing projects in the video games industry do indeed fit the definition of crowdsourcing. For this reason, one of the most popular cases of crowdsourcing in game development—Steam Workshop—will be discussed, focusing on how it fits the academic definition of crowdsourcing and how the researched motivational factors are applicable (Valve Corporation 2015a, b). This connection between the academic field of crowdsourcing and a practical implementation of the concept, sets the basis for further crowdsourcing research and case study within the video games industry.

As such, the following three research questions will be answered:

(a) How may crowdsourcing be defined?
(b) What are the motivational factors that impact the level and quality of participation in crowdsourcing projects?
(c) May the definition of crowdsourcing and its underlying motivators for participation be applied to the case of Steam Workshop?

2 Research Method

A literature review will provide the data needed to answer research questions A and B. Additionally, in order to answer research question C, a minor case study was conducted on Steam Workshop.

For the literature review, existing literature from scholars in the area of motivations in crowdsourcing, but also knowledge sharing, open innovation, open source software development and similar concepts, has been collected and analyzed. From this material, the crowdsourcing phenomenon is defined and explained, and the identified underlying motivations for individuals to participate in crowdsourcing are further analyzed in an effort to categorize them. The existing literature on crowdsourcing was rather extensive, but several papers were connected to a specific company or crowdsourcing project, and literature with a comprehensive focus on crowdsourcing and its underlying motivational factors were fewer. Thus, in order to increase the depth of the study, literature concerning motivational factors for participation in knowledge sharing, open innovation, open source and similar concepts used by various authors was included in the review. Although there are significant differences between these concepts, the boundaries of crowdsourcing are currently very wide and poorly defined (Estellés-Arolas and González-Ladrón-De-Guevara 2012). For instance, there is ongoing disagreement on whether open source development lies within those boundaries (Brabham 2008; Hammon and Hippner 2012). Regardless of any disagreements on the boundaries of crowdsourcing, Brabham (2008) states that motivational factors in open source development are also helpful when trying to understand what motivates people to participate in crowdsourcing.

Not only were there disagreements on the boundaries of crowdsourcing, but there were also differences and contradictions in the categorization of motivational factors performed by different authors. For such cases, the categorization chosen in this paper was determined by evaluating the strength of the support provided by the underlying papers. Another issue was the fact that authors occasionally mentioned motivational factors with no accompanying explanation or definition. As such factors were without description and not verifiable by other literature, they were excluded from the review.

For the case study on the crowdsourcing system implemented through Steam Workshop, five semi-structured interviews were conducted with participants who have made successful contributions to the platform. Due to their experience and insights, they were able to provide in-depth knowledge on the platform, as well as their own motivations for participation. Furthermore, one semi-structured interview was conducted with one of the key developers of the platform, who was able to provide unique insight based on his leading role and long experience with the project. This interview data provided a deeper understanding of how Steam's game content crowdsourcing system works and what motivates participation among members.

3 Defining Crowdsourcing

In existing literature, authors are typically very specific and often contradictory in their definitions of crowdsourcing. The concept of crowdsourcing is relatively new and it is applied to a variety of practices of different character (Estellés-Arolas and González-Ladrón-De-Guevara 2012). Through an extensive review and analysis of existing literature on the subject, Estellés-Arolas and González-Ladrón-De-Guevara (2012, p. 197) have attempted to integrate the wide array of crowdsourcing characteristics into one all-encompassing definition:

> Crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken.

4 Categorizing Motivational Factors

Motivational factors are typically divided into two categories: intrinsic motivation and extrinsic motivation (Gan et al. 2012; Leimeister et al. 2009; Zheng et al. 2011; Battistella and Nonini 2012). Motivational factors are intrinsic when the reward for participating comes from the activity itself (Schacter et al. 2011). For instance, people are intrinsically motivated when listening to music because it is relaxing, or playing football because it is gratifying. For these types of activities, no kind of reward or payoff is sought, since the activity itself entails a reward or payoff. In contrast, motivational factors are extrinsic when the rewards for participating come as a result of one's activity, and not from performing the activity itself (Schacter et al. 2011). Extrinsic motivations are the reason why people, for instance, floss their teeth, work hard to earn money, study for exams, or play football in order to win a championship. These activities do not generate any direct pleasure for the participants, but may instead lead to pleasure in the future. Furthermore, self-determination theory, as coined by Deci and Ryan (1985), state that intrinsic motivations can be undermined by extrinsic motivations. For example, if a boy who plays football for his own enjoyment is offered a monetary reward for winning matches, self-determination theory claims that the boy will become less likely to play without extrinsic motivations, such as trophies and money, in the future.

However, in addition to intrinsic and extrinsic motivation, a third category of motivational factors has been identified and used in literature: social motivations. While some authors integrate and divide social motivations into the existing

intrinsic and extrinsic motivational categories (Battistella and Nonini 2012), others argue that a person's code of conduct is largely impacted by social motives, and that such factors should be separated into a third category (Antikainen and Väätäjä 2010). According to Frey et al. (2011), motivation behind participation can be viewed as a continuum, with intrinsic motivations on one end, extrinsic motivations on the other end, and social motivations positioned between them.

This paper follows the latter approach: The factors are categorized into intrinsic, extrinsic and social motivations, based on a literature review of motivational factors in open innovation, extended with literature on motivations to contribute to crowdsourcing specifically.

5 Motivational Factors in Current Literature

This section aims to answer research question B: What are the motivational factors that impact the level and quality of participation in crowdsourcing projects? A total of 25 distinct motivational factors have been identified in literature. These factors will now be categorized and described, and later summarized in Sect. 7.

5.1 Intrinsic Motivators

Deci (1972, p. 113) defines intrinsic motivation as when a person "performs an activity for no apparent reward except the activity itself". Since several different types of intrinsic motivations have been identified in the literature review, they have been subdivided into three separate categories: hedonism, learning, and ideology-related motivations.

5.1.1 Hedonism

Hedonic benefit occurs when a person experiences pleasure, curiosity or stimulation in his or her participation. When such experiences take place in a participant, favorable attitudes are developed towards the providing community. An interesting, relaxing and enjoyable experience can attract more users and increase participation and contribution (Gan et al. 2012). ***Enjoyment and fun*** is a central and frequently mentioned intrinsic motivation. Lindenberg (2001, p. 331) states that "enjoyment can be conceptualized as an emotion tied to improvement of one's condition" and that "The broader-based the improvement (i.e., the more multifunctional the activity), the higher the enjoyment." Also, contributions have a tendency to increase when participants are having fun doing so (Tokarchuk et al. 2012; Olson and Rosacker 2013). Furthermore, enjoying an activity appears to be an important motivational factor not only for crowdsourcing, but also for several different kinds of online communities (Antikainen and Väätäjä 2010) and is often considered a core part of intrinsic motivation (Lakhani and Wolf 2005). This was confirmed by Frey et al. (2011) in a study in which participants of user communities rated enjoyment and having fun as the most important reason for their participation in the communities.

Additionally, ***intellectual stimulation***, which includes intellectual challenges and interesting objectives, have been shown to be important motivations for contribution in many communities—especially open-source communities and problem-solving communities hosted by companies (Antikainen and Väätäjä 2010; Ridings and Gefen 2004; Lakhani and Wolf 2005; Olson and Rosacker 2013). Crowdsourcing also offers each participant an opportunity for ***entrepreneurship***, an ***outlet of creative energy*** (Brabham 2008) and a chance to ***exercise amateur skills*** (Shepherd 2012). It is argued that crowdsourcing can inspire entrepreneurial mentality since it can provide an outlet for suppressed talent among highly educated, younger generations, who develop diverse creative skills which are not used sufficiently in information economies (Shepherd 2012).

5.1.2 Learning

Open innovation communities, including crowdsourcing, are not only a source of learning for companies where ideas and solutions are produced (Chesbrough 2003), but also a motivator for participants to engage in crowdsourcing communities (Gan et al. 2012). A crowdsourcing community possesses valuable knowledge related to a product or service. When participating and engaging in such a community, individuals can easily access and obtain this knowledge by participating in projects and reading ongoing discussions (Gan et al. 2012). New ***knowledge creation*** and individual learning is enabled when participants combine and exchange their own personal knowledge with each other (Wasko and Faraj 2000).

The ability and possibility of sharing knowledge with others, and thereby feeling competent, can in many cases be satisfactory in itself. This information and ***knowledge exchange*** has been shown to be the most popular reason for joining and participating in online communities (Ridings and Gefen 2004). There are indications that people participate in communities not only because they are interested in posing questions and finding solutions, but also because communities provide access to knowledge that resides in the minds of individuals, and allows for feedback on solutions and ideas (Wasko and Faraj 2000).

Participants do not only have the possibility to learn from each other, but also benefit from interacting with and aiding professionals while performing their hobby (Shepherd 2012). In the case of Threadless—a site where product designs are freely submitted, evaluated and potentially sold—participants appreciate receiving feedback on the work that they perform, as they can learn from it and ***improve their creative skills*** (Brabham 2010; Olson and Rosacker 2013).

5.1.3 Ideology

In some online communities—open source development communities in particular—many individuals participate without any direct compensation for their contributions, thus performing on a voluntary basis (Antikainen and Väätäjä 2010). For these communities, ideology is considered one of the underlying motivational factors for participation. Ideology is also thought to be a strong motivational factor in, for instance, the open content communities like Wikipedia.

However, interestingly, even though participants claim that ideology is high on their list of reasons for contributing, it is not coupled with an increase in actual contribution (Nov 2007, pp. 60–64).

Another reason behind contribution is for people to grow as individuals—not only by increasing their knowledge as mentioned above, but also due to improvements in ***self-esteem*** and their own self-perception (Tokarchuk et al. 2012). Additionally, individuals may provide valuable information to online collaborations due to a ***sense of efficacy***—that is, the possibility of the input having an environmental effect (Kollock 1999; Chandler and Kapelner 2013). Contributions can support a person's self-image of being efficacious, and contributions are likely to increase if community changes can be observed as a result of their actions. Furthermore, Kollock (1999) argues that an increased group size may have a positive effect on one's level of contribution, as it expands the audience and impact of one's actions.

5.2 Extrinsic Motivators

Extrinsic motivation refers to "the performance of an activity because it leads to external rewards" (Deci 1972, p. 113). In this paper, the identified extrinsic motivational factors have been divided into two categories: individual and economic.

5.2.1 Individual

Individual extrinsic motivation includes factors that result in personal benefits for those contributing to the community. Participants may contribute in order to become well-regarded in the eyes of others and to increase their ***reputation***. That is, they participate to improve their prestige and professional status (Tokarchuk et al. 2012). Kollock (1999) further explains that if a person shows great willingness to help others and provides answers of impressive technicality and high-quality information, that person's prestige within the community rises. If this is an important motivational factor for the participants, contributions are likely to increase if they are visible to others and given recognition. There exists some contradiction as to whether reputation should be considered intrinsic or extrinsic motivation. Gan et al. (2012) see it as being part of a personal integrative benefit that is intrinsic, whereas others categorize it as an extrinsic factor (Antikainen and Väätäjä 2010; Zheng et al. 2011; Battistella and Nonini 2012). Another motivational factor, which is strongly related to reputation, is ***competition***; people can contribute merely to show that they are better or do more than others, as an effort to build up and improve reputation (Tokarchuk et al. 2012).

Zheng et al. (2011) recognize not only the importance of reputation systems when participating in crowdsourcing contests, but also ***firm recognition***. They found that motivation to gain recognition has a positive correlation with the willingness to participate. Also, Jeppesen and Frederiksen (2006) identified that the desire to be recognized by the initiating company made innovative users more motivated—even more so than in the case of increased peer recognition. One explanation could be

that innovative users are more advanced and strive stronger towards identifying themselves with the company and its professionals, rather than with peers (Jeppesen and Frederiksen 2006).

Crowdsourcing communities can also potentially provide ***career opportunities*** for participants (Gan et al. 2012). The individuals who contribute the best may receive the opportunity to participate in company-hosted conferences where potential employees may be present. Alternatively, those that are the most active may be personally contacted by managers for further communication and future assignments (Gan et al. 2012). Leimeister et al. (2009) shows that participants are, to a certain extent, motivated by the possibility of being considered for future projects, suggesting that human resource departments can use idea competitions to recruit young academics. Furthermore, Brabham (2010) identifies ***freelance opportunities*** as an important motivational factor for members of the Threadless community. Many individuals are driven by the possibility of a hobby developing into a serious profession, such as freelance opportunities or full-time employment.

Contributions in different projects may result in various merits and achievements that demonstrate the competency of the contributor, to peers and potential places of employment. Leimeister et al. (2009) show that participation in open source development projects and idea competitions can thus be considered a channel for ***self-marketing***. Consequently, it is important that contributors are able to present themselves, their knowledge, ideas and work to the rest of the community in order to receive attention (Leimeister et al. 2009). A final individual extrinsic motivator for participation in crowdsourcing is ***user need*** and the possibility to influence the development of a service or product (Antikainen and Väätäjä 2010). User innovations and commercially attractive innovations are often developed together with lead users (von Hippel 2005), and the main reason that lead users participate in the innovation process of a product is their willingness to customize products for their own usage, since existing products do not fulfill all of their requirements (von Hippel 2005; Frey et al. 2011).

5.2.2 Economic

Economic extrinsic motivations include factors that directly or indirectly result in economic benefits for the participants. Participants can be incentivized by the opportunity to receive ***tangible rewards*** such as money, prizes, gifts, or free products or services. These types of rewards have, according to Gan et al. (2012), positive reinforcement and can encourage future repetitive behavior. Organizational psychology and social research have several times shown that rewards play a significant role in motivating people to participate and act in certain ways (Frey et al. 2011). Being given financial incentives can be seen as compensation for the cost of participating in an open innovation project, and can create a sense of exchange-based justice (Frey et al. 2011). Brabham (2010) identified financial rewards as an important motivation for participating in crowdsourcing. Also, Lakhani et al. (2007) showed that the opportunity to earn money is one of the most important motivations for participants at InnoCentive, an intermediary that crowdsources research and design problems to its large network of members, on

behalf of companies. However, Zheng et al. (2011) showed that there was no significant correlation between motivation for financial reward and participation, and they argued that earning rewards is not always a driving motivation. Finally, an ***implicit promise of rewards*** in the future can be another motivation for engaging in various projects (Tokarchuk et al. 2012).

5.3 Social Motivators

Literature suggests that along the continuum between purely intrinsic and purely extrinsic motivations, there exist other factors that motivate people into contribution (Frey et al. 2011). Antikainen and Väätäjä (2010) identified social motivation as a third category of motivational factors. One fundamental component in online communities is that members share common interests and beliefs; it can be assumed that social motivations are important to obtain a sustainable community, and to improve collaboration between participants (Antikainen and Väätäjä 2010). One social motivation is ***altruism***. People can behave altruistically and contribute to others' welfare without any expectation or need for compensation (Wasko and Faraj 2000; Chandler and Kapelner 2013; Olson and Rosacker 2013). They can feel a moral obligation to the community that results in this altruistic behavior, where sympathy for others is what triggers the action (Tokarchuk et al. 2012).

Furthermore, Wasko and Faraj (2000) state that socializing or developing relationships is not the primary reason for using forums and communities. Instead, they argue that it is the ***care for community***—to give back in return for previously received help that motivates people to participate—which can be seen as an obligation to the community (Lindenberg 2001; Lakhani and Wolf 2005). Strongly connected to this are contributions and aid given with the expectation of such services being returned or paid forward in the future. This is referred to as ***reciprocity*** (Tokarchuk et al. 2012; Antikainen and Väätäjä 2010; Kollock 1999). Even though people can accept an outstanding debt when it comes to contribution, there exists some sense that there should be a balance over time. It has been observed that individuals that often contribute and offer advice appear to receive help themselves more quickly than others (Kollock 1999).

At the dawn of online communities, seeking ***friendship*** and spending time together was considered one motivation for participation (Antikainen and Väätäjä 2010; Wasko and Faraj 2000). Ridings and Gefen (2004) showed that friendship is sought by most participants, and it is considered more important than recreation and social support. It was the most popular reason among communities dealing with members' personal interests, recreation or pets. Additionally, in connection with community friendship, ***peer recognition*** and the feeling of being valued is considered another motivating factor in online communities (Antikainen and Väätäjä 2010; Gan et al. 2012). Brabham (2010) showed that Threadless' exposure and pulse on the forum was an essential factor for participants joining that community. In contrast, Jeppesen and Frederiksen (2006) could not support the claim that innovative users are motivated by recognition from peers.

Brabham (2010) also identified ***addiction*** to a community, in his case Threadless, as an additional theme that made individuals participate. This can be seen as an

extension of the notion of 'care for community' or 'love of community', and indicates some kind of brand affinity for online communities. Addiction is defined as a medical condition of unhealthy attachments to an activity or substance. Although the term may be used uncritically by participants at Threadless, Brabham (2010) argues that considering the love for and the time spent on the community, the term is not far-fetched.

6 The Case of Steam Workshop

As the study has now provided a clear definition of crowdsourcing and an overview of the motivational factors behind it, this section will apply the concept to the video games industry. It will clearly show that Steam Workshop is a typical application of crowdsourcing, and that several of the identified motivational factors for participation have been applied.

Valve Corporation is an American entertainment software and technology company founded in 1996 (Valve Corporation 2016a, b). In 2007, the company released an online computer game named Team Fortress 2, which is particularly well-known for its wide array of game content; it has been regularly updated with free content, such as items wearable by players in-game, with steadily increasing frequency ever since its release (Valve Corporation 2016a, b). A major source of this large amount of new content is the item submission platform that was implemented by Valve a few years after the game's release: the Steam Workshop. The platform allows for any community member to publicly share self-made items that may be officially added to the game and used by all players (Valve Corporation 2015a, b).

6.1 The Contribution Process

First, a person designs and creates an in-game item using 3D modeling software. Then, the modeler submits it to the Steam Workshop platform, where it is open for anyone to view, discuss and vote on. The most popular items in the Steam Workshop will catch the attention of Valve, who can choose to add the item into the game and put it up for sale in its virtual item store (Valve Corporation 2015a, b). From the interviews with modelers, it was revealed that the original modeler receives 25 % of all revenue that is generated from the sale of that item.

The most successful community modelers, who typically have more than a dozen items featured in the store, receive revenue of approximately $3000–$6000 per month. In addition to that, occasional major sale bursts have increased the total revenue of certain modelers to hundreds of thousands of dollars. As the monetary potential of participation in this crowdsourcing system is more widely realized, so increases the expertise of the people who choose to partake in it (Walker 2013). The modeler interviews showed that the background of successful contributors varies in terms of education and previous work experience: some contributors have relevant formal education while others are self-taught, and some have no work experience in the field while others hold full-time jobs in 3D modeling.

Prior to implementation of the item crowdsourcing system, items were, according to Walker (2013), developed internally and released at a rate of a few creations per month. Comparatively, the crowdsourcing platform allows for dozens of creations to be released—and the technical limit is even higher. Contrary to the company's expectations, the more items are transferred to the store, the more items are contributed to the Workshop by the community; there is never a shortage on contributions.

6.2 Defining Steam Workshop as Crowdsourcing

With the definition of crowdsourcing presented in Sect. 3, the case of Steam Workshop can be justified as a typical crowdsourcing project: it is a participative online activity in which the company has proposed to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The participants bring their work, knowledge and experience, and the task entails benefits for both Valve—in increased output and sales—and the participants—in sales revenue, improved skills and other factors.

As such, many learnings from the academic field of crowdsourcing may be extracted and applied to this and any other projects in the video games industry that may be classified as crowdsourcing.

6.3 Motivational Factors for Contributing

Valve focused primarily on ***monetary rewards*** as a motivator for contribution to their crowdsourcing platform. Walker (2013) states that as the monetary potential of Steam Workshop was realized by the community, professional modelers started participating to an increasing extent—improving the quality of contributions. Therefore, Valve are careful not to interfere with the monetary reward system that has been developed for the platform. A correlation has emerged between creation and reward, through customers and their purchasing decisions. By attempting to spur motivation by favoring certain contributors, Valve would be upsetting that correlation—and thus the key reason for participation.

Interviews conducted with successful contributors revealed several other motivational factors. In addition to tangible rewards, a common key motivational factor is the want to improve one's skill in modeling—so-called ***creative skills improvement***. However, interviews revealed that motivation varies significantly depending on the level of experience the contributor has within the platform. An inexperienced modeler may be using the platform as a way of testing ***career opportunities*** within 3D modeling. But as modelers gain experience and develop items that are accepted into the store and bought by thousands of players, so change their motivation for continuing to participate in the system. Item development becomes more about the social relationships that are built as a result of a person's role in the system, and the stimulation of seeing other players use, talk about and enjoy the creations of the modeler. Motivational factors such as ***care for community***, ***friendship*** and ***peer recognition*** become highly relevant at this stage.

7 Conclusion and Discussion

The literature review yielded a total of 25 motivational factors that are of varying importance to participants within crowdsourcing. The factors have been divided into three separate categories: intrinsic motivators, extrinsic motivators and social motivators. Both the factors and the categories to which they belong have been described in the paper and summarized in Table 1.

This clear presentation and categorization of motivational factors may be useful for companies that are planning to host a crowdsourcing platform where contributions from community members are crucial; in order to understand what motivates the participants, the provided platform and system could be organized in such a way that it increases the willingness of people to participate.

For instance, it is clear how the Steam Workshop case can be analyzed through the factors listed above. The conducted interviews revealed several motivational factors that come into play in the system: tangible rewards, creative skills improvement, and career opportunities. Furthermore, as the contributors progressed

Table 1 A list of the 25 identified motivational factors behind contribution to crowdsourcing projects

Intrinsic	Hedonism	Enjoyment
		Intellectual stimulation
		Entrepreneurship opportunity
		Creative energy outlet
		Exercising amateur skills
	Learning	Knowledge creation
		Knowledge exchange
		Creative skills improvement
	Ideology	Self-esteem
		Sense of efficacy
Extrinsic	Individual	Reputation
		Competition
		Firm recognition
		Career opportunities
		Freelance opportunities
		Self-marketing
		User need
	Economic	Tangible rewards
		Implicit promise of rewards
Social		Altruism
		Care for community
		Reciprocity
		Friendship
		Peer recognition
		Addiction

through the system—becoming established in its community and fulfilling their initial goals—their reasons for continued participation shifted towards more social factors, such as care for community, friendship and peer recognition.

Through the awareness of these motivational factors, developers may actively use them to their advantage. A crowdsourcing platform can be evaluated against the above list, asking such questions as: What motivational factors are highly pertinent to our platform? How may we better utilize each factor in order to capture a wider and more competent part of the community? Do we understand what factors are the most relevant to each segment of the community? Are we attracting new contributors, as well as retaining existing contributors that have progressed further in the system?

These questions may be essential in evaluating and improving the motivational factors for partaking in crowdsourcing projects, and thus the quality and quantity of contributions.

8 Future Research

For the presented motivational factors to become more practically relevant, a different kind of categorization might be needed, which is built on a practical rather than psychological division—one that focuses on the characteristics of the intended crowdsourcing system, and highlights the motivational factors that could be the most essential to it, based on learnings from similar cases. This, in turn, requires more clearly defined and widely accepted boundaries and characteristics within the crowdsourcing concept, enabling a common frame of reference in the analysis of crowdsourcing projects and their primary motivational factors. One such categorization has already been attempted by Smith et al. (2013), in order to provide a practically applicable framework for technological entrepreneurs to apply motivational factors to crowdsourcing endeavors.

Furthermore, it could be of interest to examine crowdsourcing projects in the time dimension. In the case of Steam Workshop, it was seen that the motivational factors relevant to contributors had changed over time. This is surely the case for other kinds of activities as well, such as work employment, sporting, or voluntary duties; as a person advances through a system and his or her personal conditions change, so changes the motivations for that person to remain in that system. Thus, it might be important to consider how well a crowdsourcing system retains participants. In the case of Steam Workshop, for instance, would modelers have continued to participate if the system did not allow the social interaction that resulted from their work? Would the initial motivations have been sufficient for their involvement, as they became decreasingly important over time? Further research into the time dimension of crowdsourcing motivators would help developers ensure a higher retention.

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Interviews with Community Modelers

32 years old male Steam Workshop contributor from the United Kingdom, conducted 12 May 2013.
21 years old male Steam Workshop contributor from Sweden, conducted 13 May 2013.
30 years old male Steam Workshop contributor from the United States, conducted 19 May 2013.
24 years old male Steam Workshop contributor from the United Kingdom, conducted 19 May 2013.
24 years old male Steam Workshop contributor from the United Kingdom, conducted 20 May 2013.