Highly Successful Projects Inhibit Coordination on Crowdfunding Sites

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ABSTRACT

Donors on crowdfunding sites must coordinate their actions to identify and collectively fund projects prior to their deadline. Some projects receive vast support immediately upon launch. Other seemingly worthwhile projects have more modest success or no success at raising funds. We examine how the presence of high-performing "superstar" projects on a crowdfunding site affects donors' ability to coordinate their actions and fund other less popular but still worthwhile projects on the site. In a lab experiment where users simulate the dynamics of a crowdfunding site, we found that superstar projects reduce the likelihood that other projects are funded by the crowd, even when the super project has no opportunity to steal away donations form other projects. We argue that this is due to superstar projects setting too high of a standard of what a "fundable" project looks like, leading donors to underestimate the amount of support within a crowd for less exceptional projects.

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INTRODUCTION

Crowdfunding platforms such as Kickstarter or Indiegogo allow people with ideas for projects to seek funding via small donations from a large number of donors. Donors interested in a project face some risk when donating because they may lose their donation, either temporarily or permanently, without ever seeing the project realized, if other people do not donate. As a result, donors often attempt to form an idea of how popular a project is and how likely others are to donate, and use that when deciding whether to donate [13].

Crowdfunding sites give information about how donors have behaved (i.e. how much has been donated) but this may not actually reflect how much the "crowd" of potential donors *values* a project. Many donors who highly value a project may be withholding their donations as they wait to see what others will do, or because they are trying to free-ride off the donations of others [12]. This can lead to projects failing to reach their funding target not because the crowd does not value a project, but because the crowd has insufficiently signaled that it values the project [12]. This represents poor *coordination* by the crowd at signaling to its members that the project has value and should be funded.

Potential donors looking for signals from the crowd about the value of a project may easily encounter information about other projects on the same platform or even on other crowdfunding sites. Successful crowdfunding projects are frequently reported in mainstream news outlets. Crowdfunding sites feature projects on their home pages. And project pages are shared via social media. Highly successful projects, such as those that receive millions of dollars in a short time period[1], may make it appear as though there is an abundance of people willing to donate money to projects.

Yet these highly visible and high performing projects may set unrealistic expectations among potential donors for a less noteworthy project. These expectations may lead donors to underestimate the collective valuation of a project by the crowd and withhold donation, causing a project that has sufficient valuation from the crowd to fail to reach its target due to poor coordination. Much like an overachieving student in a class can "ruin the grading curve" for other students, superstar projects can hinder other projects by raising the crowd's perceived standard of "fundability." In this paper, we present findings from an experimental simulation of a crowdfunding site that demonstrate how the visibility of high performing projects can cause poor coordination and inefficiency among the crowd's efforts to fund projects that it values.

BACKGROUND

Crowdfunding sites try to match new project ideas to groups of people who will find enough value in a project that they will donate enough money to see it realized. While some research has explored the use of intelligent recommender systems to try to match projects to donors [2, 10], in general this matching is self-coordinated by users of the site navigating its rules and affordances. HCI research on crowdfunding has found that project creators use consistent project updates [14],

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[1]http://www.statista.com/statistics/254530/fastest-projects-to-reach-1-million-usd-on-kickstarter/

persuasive language in project pitches [8], existing social networks and communities [6], and reasonable project goals [9] to improve the likelihood that a project is funded.

Other work has looked at how donors and potential donors coordinate their actions to identify and fund worthwhile projects. The All-or-Nothing style of crowdfunding, where donations are returned to donors if a project's goal is not reached by a pre-determined deadline, has been found to make coordination difficult because it encourages people to donate their limited funds to the projects that they personally value the most, rather than coordinating with the crowd at large to pool collective funds efficiently so that more projects can be completed [13]. Donors also face a challenge in that the timing of their donations can impact the success of a project as much as the amount of their donation [12], meaning that projects that could be funded may be overlooked by the crowd if donations are not made at the right time.

These coordination challenges stem from the fact that donors know how much they value a project themselves, but have only limited information or no information about how others value a project [12]. Each potential donor can be thought to have a **value** for the project, which is the maximum amount that they would be willing to donate to the project. If the total value from all of the potential donors is greater than the amount of funds needed for a project, then the project is **fundable** in theory[13]. However, people don't always donate their value; there are often strategic reasons that they prefer to donate less, including free riding (hoping other users will pay for the project instead)[3, 13], risk aversion (not wanting to take the risk that the project won't be funded), and strategic timing (waiting to see if others donate first) [12]. This can lead to the unfortunate situation where a project is fundable in theory, but doesn't actually receive enough donations to be funded in practice.

On Kickstarter 63% of projects do not receive enough donations to meet their funding goal [7]. It isn't clear how many of these non-funded projects failed because they were unfundable (not enough people valued the project) and how many projects were fundable in theory but failed due to people donating less than they were willing to donate. On real-world crowdfunding sites, this is impossible to evaluate; while behavior (actual donations) is visible and measurable, the underlying personal value for each potential donor is not [11].

In an exploratory study as part of the project we are reporting in this paper, we retrieved the project pages for all projects on Indiegogo.com from its inception in January 2008 to October 2013, and we found that only 31% of projects reached their funding target, and that failed projects on average receive less than 30% of their goal. However, some other projects were highly successful, raising over $10,000 per day and easily reaching their goal. We also noted that starting from 2011, there was nearly always at least one active project on Indiegogo collecting donations fast enough to be completed in less than 8 days (which puts it in the top 1% of all projects). This means that while these projects are rare relative to the entire set of projects on Indiegogo, they are a nearly constant presence on the site. Furthermore, as sites tends to promote
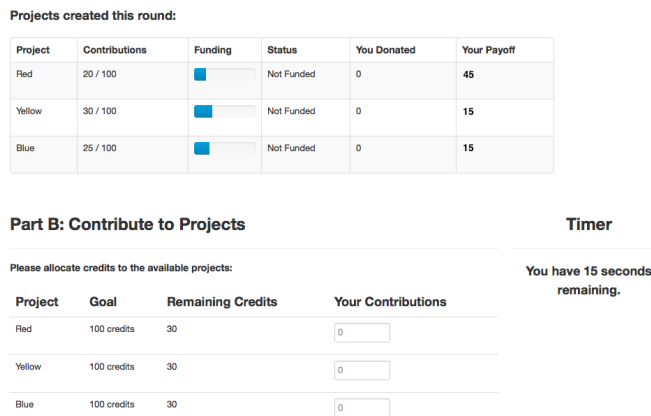

Figure 1. User interface for our simulated crowdfunding game.

highly successful projects to the front page, these successful projects are highly visible to all users of a crowdfunding site.

Doshi [5] has examined how these high-performing star projects affect other projects on the site and even projects on other sites. He found that donations to a site in general tend to increase after a star project is posted, although the size of the effect varies depending on the platform (Indiegogo vs. Kickstarter) and the category of the super project. This suggests that star projects bring valuable publicity to crowdfunding in general and increase the pool of potential donors.

We hypothesize that superstar projects, while possibly growing the pool of potential donors, may also make it difficult for crowds to identify high quality projects that could be funded but are not as overwhelmingly popular as star projects. We argue that the top projects on a site at any given time can set a standard by which potential donors gauge the level of underlying interest in a particular project. These star projects can cause users to underestimate how much interest there is for more typical projects, causing them to avoid donation and ultimately fail to fund these projects. We argue that crowdfunding sites can become more efficient at helping users coordinate to match donors to projects if they can help donors find projects for which there is sufficient underlying valuation to be completed if the crowd coordinates well.

EXPERIMENTAL SIMULATION OF CROWDFUNDING

We simulated a crowd of interested potential donors and a crowdfunding platform by using a threshold public goods game [4] in which a group of participants are given "credits" that can be donated to a project on a fake crowdfunding site. If the project reaches a pre-determined target in donations, all participants are given bonus credits (known as a "payoff"). The bonus credits and credits that are not donated to a project are later exchanged for cash, as are credits that were donated to projects that did not reach the target (i.e. "All-or-nothing" crowdfunding). This creates an incentive for participants to have a true preference for whether a project on the fake crowdfunding site reaches its funding threshold [11]. A similar approach based on experimental economics has been used in HCI-studies of crowdfunding to evaluate the rules of a site [13] and donation timing decisions [12].

This approach to studying crowdfunding using experimental economics provides a critical piece of insight that cannot be gained using any observational methods. In this experiment, we *assign* the value that a crowdfunding project has to each individual who visits the site, which means this value is known for the entire set of potential donors. Observational studies can measure behavior (i.e. how much people donate) but they cannot reliably measure value.

By knowing how a crowd values a project, we can distinguish between projects that are fundable in theory but receive insufficient donations, and projects that are unfundable even in theory. When a fundable project doesn't receive enough money through donations, there has been a failure in coordination.

In our crowdfunding game, six participants are each shown a site with three projects that each need 100 credits. These projects had only meaningless labels and no descriptions, to help ensure that only the assigned payoffs influenced participants' valuation of projects. Each participant is given a budget of 30 credits *per project*, and participants can donate any amount between 0 and 30 credits to each of the three projects. A timer is set to 60 seconds, during which participants can make their donations. Donations are made immediately visible on the site so that everyone can see the current status of the project, just as happens on most crowdfunding sites. Participants can donate as many times as they wish to any project as long as they have credits remaining in their budget. Figure 1 shows what the interface for the site looked like.

An important feature of the study design is that donors' budgets were fixed for each project, meaning that donating to one project did not reduce the amount of credits that could be donated to other projects. This feature made the projects economically independent, as if they were projects who have entirely separate markets of potential donors. This is important for the internal validity of the experiment because it helps separate allocation (project A taking actual credits that would otherwise go to project B) from perception (project A looks like it is more popular than project B), and the experiment is interesting because it can identify perception issues even if decisions aren't independent in the real world. However, we believe it is also realistic; project-based crowdfunding users often discover projects through family and friends [1, 6] and people come to the crowdfunding site and decide whether or not to contribute to a specific project (as opposed to shopping on the site for a project to contribute to). This effectively creates separate and independent decisions about each project on a site.

There were four types of projects in the experiment, even though only three appeared on the site at any one time. These projects differed in the distribution of payoffs that were assigned to participants (described in Table 1). A *superstar* project was very popular among all subjects and had a very high collective valuation. A *high quality* project was also generally popular, although less so than the superstar project. A *mediocre* projects was even less popular but still fundable. An *unfundable* project had an aggregate payoff of less than 100, meaning the crowd had no incentive to complete this project.

Table 1. Payoffs for each project type. This is the assigned value (maximum willingness to donate) for each user. Note that an individual participant held different User roles for each project.

	Superstar	High Quality	Mediocre	Unfundable
User 1	45	45	35	15
User 2	45	45	35	15
User 3	45	35	25	15
User 4	45	25	25	15
User 5	35	15	15	15
User 6	35	15	15	15
Total	250	180	150	90

Table 2. Completion rates of projects on each type of site.

# Completed	Mediocre Condition	Superstar Condition
0	39%	19%
1	41%	52%
2	19%	29%
3	0%	0%
Avg # Completed	0.80 (27%)	1.09 (36%)

In all rounds of the crowdfunding game, the site had one Unfundable project and one High Quality project. In one version of the site, the third project was a Superstar project, and in the other version the third project was a Mediocre project. This design allows us to examine how the presence of Superstar projects on a crowdfunding site affects other types of projects on the site, most notably high quality projects that the crowd generally favors.

We recruited 120 undergraduate students at our university; from them we formed 20 groups with six subjects per group. Each group played 15 rounds of the game (300 rounds total among all groups), with each subject's user role randomly reassigned between rounds. In each round, the six subjects had 60 seconds to make donations. Any project that received a total of 100 credits or more was considered funded, and subjects received payoffs for funded projects. Experimental condition (Superstar condition or the Mediocre condition) was assigned at the group level, and remained constant for all 15 rounds.

RESULTS

As expected, the Superstar condition was more effective at funding projects on the site overall (see Table 2). This is primarily due to the high rate of funding of the superstar project itself compared to the low rate of funding of the Mediocre project. This suggests that our assignment of values worked and subjects based their donations on their assigned values.

Our results show that Superstar projects have a detrimental effect on the efficiency of a crowdfunding site. The High Quality Project was present and equally fundable in both conditions. Projects are economically independent; donating to one project does not affect the budget for others. Therefore, the High Quality Project should average the same donations in both conditions. However, it received more in donations when it was in the Mediocre condition than in the Superstar condition. Also, this High Quality project was nearly twice

Table 3. Completion rates and average donations for each type of project. The high quality project was funded significantly less in the Superstar (S) condition than in the Mediocre condition (M).

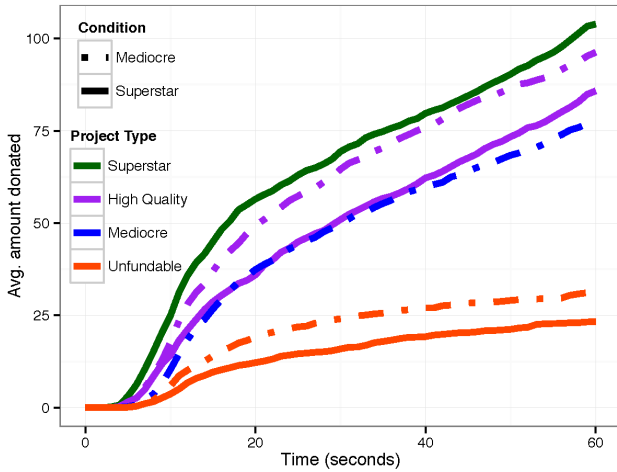| Condition	Completion Rate		Avg. Donations (St. Dev)	
	M	S	M	S
High Quality	59%	31%	96.27 (12.29)	85.80 (19.78)
Unfundable	0%	0%	31.25 (16.06)	23.29 (15.52)
Mediocre	21%	-	77.74 (23.67)	-
Superstar	-	78%	-	103.91 (9.63)

Figure 2. Average project growth over time. Notice the purple line is much lower in the Superstar condition than in the Mediocre condition, even though the project is identical in both conditions and economically independent of other projects.

as likely to be completed in the Mediocre condition, when it was paired only with a Mediocre and Unfundable project, than in the Superstar condition (see Table 3). The Unfundable project also received an average of 7.95 more credits in donations and grew more quickly (see Figure 2) when there was no Superstar project. These differences in funding of the High Quality and Unfundable projects between conditions of the study were found to be statistically significant by Mann-Whitney U-tests ($p < .05$).

This effect suggests that Superstar projects may inhibit coordination on crowdfunding sites by setting a high standard for what it takes to be a "fundable" project. Potential donors may determine that the growth of a project that interests them is insufficient due to being *relatively* slower than the best projects on a site, causing them to withhold donation.

DISCUSSION

To summarize, a project on our simulated site that was fundable in theory was completed only about half as frequently when it appeared on the site simultaneously with a superstar project, as compared to appearing with less exceptional projects. This suggests that superstar projects can make it difficult for crowds to coordinate and identify that a fundable project is indeed fundable.

This result is not due to the Superstar project taking donations away from other projects, as the design of our experiment ensured that projects on the site were not in competition for credits because participants had a fixed budget for each project. The top project may have dominated participants' attention during the 60-second round which may explain the results. However, participants in a pilot of this study suggested that three projects were not an excessive demand on attention in the timeframe. Furthermore, the increased donations to the unfundable project in the Mediocre condition argue against the attention explanation, since it was always the third most popular project yet experienced more donations when the top project was a High Quality project instead of a Superstar project. The findings also cannot be explained by "herding" in which donors valued a project more when they thought others valued it, as valuations were by design fixed over the course of a round.

Superstar projects may set an unnecessarily high standard in the minds of potential donors regarding what a "fundable" project looks like. Users may use the highest performing projects on a site as standard to gauge whether a project of interest is receiving enough support and growing at a sufficient rate to be completed. Superstar projects that receive many donations immediately after launching a campaign may make it appear to users as if less popular projects are growing too slowly and have minimal interest from the rest of the crowd, causing them to avoid contributing.

In our study, if the site with a Superstar project had been successful at funding the High Quality project at the same rate as the other version of the site, it would have increased the percentage of projects funded by 26%. This difference represents a loss of efficiency by the crowdfunding platform in helping crowds coordinate to realize interesting new ideas, as well as a loss of revenue for the platform. This suggests that the positive effect of superstar projects observed by Doshi [5] would likely be much larger if not for a simultaneous loss of efficiency brought to the platform by the superstar projects. It also suggests that other projects that are on the site at the same time can be an important influence on whether a project gets funded.

Crowdfunding platforms may benefit by finding ways to enhance donors' ability to coordinate around fundable but not exceptional projects. HCI research has been successful at using computation to identify factors that influence project success [10, 2, 8], and this research can be the basis for intelligent systems that identify these borderline projects and assist crowds of users in coordinating their behavior within the deadline-oriented structure of crowdfunding.

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