Understanding Trust amid Delays in Crowdfunding

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ABSTRACT

Trust is essential for beginning and maintaining relationships online where assessing uncertainties and risks is difficult. While product delays have been shown to reduce trust in e-commerce settings, we understand little about the effect of delays on trust in the increasingly popular context of crowdfunding. In a mixed method study, we examine what factors influence backers' trust in crowdfunding when rewards are delayed. Based on in-depth interviews with crowdfunding participants, we found that a rich set of factors influenced backers' trust including backers' role identity and domain knowledge, backer's research on a creator's background, creators' communication during delays, and duration of delays. To better understand the factors affecting delays, we conducted a regression analysis with 4,089 delayed projects and found that the funding goal, number of backers, percent raised, number of reward levels, and creator's previous crowdfunding experience are associated with the duration of delay. We discuss design implications for managing delays and maintaining trust in crowdfunding.

Author Keywords

Crowdfunding; Trust; Expectations; Entrepreneurship; Communication; Delays

ACM Classification Keywords

H.5.3 Group and Organization Interfaces: Computer-supported cooperative work

INTRODUCTION

Trust is essential in social interaction especially when beginning a new relationship or maintaining an existing one [9]. Trust issues are more prominent in online social interactions than in offline settings due to the lack of social cues that help us detect uncertainty and risk in the physical world [8]. Within HCI and CSCW, trust has been widely studied in different online contexts [27, 7, 24, 40, 25] and trust attitudes differ across domains such as online communities, e-commerce, and peer production [9].
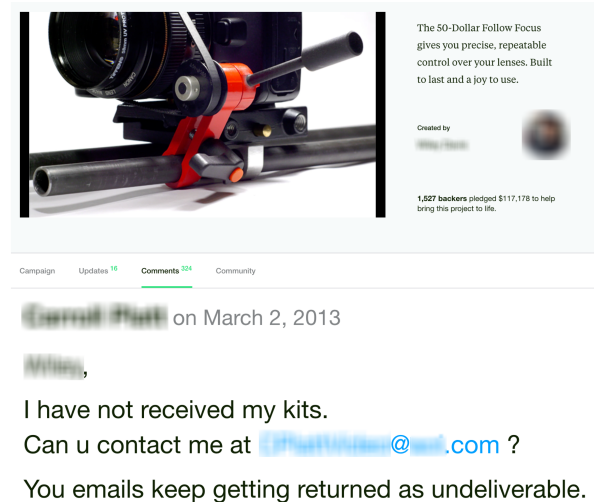
Figure 1. A screenshot of a project that was delayed on Kickstarter. Backers usually post their concerns and complaints about delays in the comment page.

Although crowdfunding has drawn a lot of attention from researchers across fields [49, 28, 35, 37, 4] few have studied issues of trust on crowdfunding platforms. Compared to traditional online marketplaces, the uncertainties and risks are greater in crowdfunding since there is (a) no guarantee that product will be made; (b) no risk assurance when a product is not made or delivered; and (c) far less information provided about the product to be made. Compared to donation platforms, motivations for participating in crowdfunding go beyond supporting a good cause to include collecting rewards and being part of a community [15]. These differences among platforms may lead to significant differences in people's trust attitudes, and by extension, the functioning of the platform for supporting its goals.

A prevalent issue on crowdfunding platforms is *reward delays* [36]. Reward delays refer to situations where project creators do not deliver their rewards on the promised delivery date that they had set when launching their campaigns (as shown in Figure 1, backers tend to communicate via comments page in the campaign website or email when there are delays). Research finds that more than 75% of rewards are delayed [36]. The popular press offers anecdotal reasons for delays including manufacturing, shipping problems, technical and design hurdles, and scaling when overfunded [10]. To our knowledge, however despite the increasing popularity of

crowdfunding, we lack empirical understanding of how delays affect trust, and if they do, what factors influence delays.

As HCI/CSCW researchers, our goal is to design a support tool for creators and backers to avoid or alleviate seemingly prevalent problems, delays, and as a first step we conducted two presented studies to provide insights into designing such support tools. First, we sought to understand whether or not backers even perceive delays as a problem in the crowdfunding settings due to a large difference in the context comparing to others such as traditional marketplace and e-commerce. If so, we tried to explore factors influence backers' trust in situations of delays. Second, since we found that delay is indeed a problem in crowdfunding from backer perspective, we sought to better understand project attributes that explain variation in delay duration so that a support tool with identified estimators can help novice creators to reason about and plan their project not just with regard to funding goals but also potential delays.

We first interviewed 14 backers who have supported crowdfunding projects and experienced delays in the past. We found that tolerance of delays differs depending on a backer's perceived role as an *investor*, *supporter*, or *consumer*. Regardless of backer role, backers reported that communication of delays is important to assure them from uncertainties and provide transparency. Further, we found that backers' domain knowledge, prior crowdfunding backing experience, and creators' credentials all influenced delay expectations. The duration of delays also played a crucial role in influencing backers' trust but the tolerance of delays varies across backer roles.

We also ran a regression analysis with 4,089 delayed projects on Kickstarter, the popular reward-based crowdfunding platform, to identify the project attributes associated with longer delays. Our results show that the number of reward levels, the creator's previous crowdfunding experience, the number of backers, the funding goal, and the percent raised are predictors for the duration of delays.

In summary, *our research contributes an empirical understanding of factors influencing delays and trust in crowdfunding platforms.* Based on these findings, we discuss design implications for a) helping creators to plan crowdfunding campaigns to minimize their delays, and supporting creators to take necessary actions when delays occur, and b) helping backers decision making process and adjust their expectations for potential delays.

RELATED WORK

Trust and Reputation
Trust is an essential part of social relationships [9] and has been widely studied in disciplines ranging from sociology and psychology to economics and political science [14, 46, 31, 41]. In this paper, we focus on trust in social computing. We use the definition of trust often cited by prior HCI and CSCW researchers [7, 47, 51, 9]; trust is the "general expectations held by an individual that the word of another can be relied on [41]". Also, trust "presupposes a situation of risk and the possibility of disappointment [29]". In crowdfunding context, we describe backer trust as backer's expectations that the word of a creator can be relied on, where there exists possible risks and disappointment (i.e. products not being made, being delayed, or not working as described, money not being spent on what the creator said to spend). Below, we compare and contrast previous research on trust and reputation in different context with respect to crowdfunding.

Online Communities
Within HCI and CSCW, trust has been widely studied in different online contexts and previous research argues that trust attitudes differ across domains [9]. For example, researchers have studied individual's attitudes about the trustworthiness of websites [9], relationships between trust and commitment in online communities [27], trust in computer-mediated communication settings [7], and trust on online peer production websites such as Wikipedia [24]. Many online communities use reputation systems to help encourage good behavior and deter norm violations [27].

Although trust has been studied in many domains, trust is overlooked in crowdfunding platforms by HCI and CSCW researchers, where trust plays a critical role in backing behavior due to great uncertainties and risks in getting rewards. Our in-depth interview expands our understanding of trust in the crowdfunding context especially when there are delays.

Marketplaces
Understanding of trust is essential for understanding interpersonal behavior in economic exchanges [12], particularly in online marketplaces where there are higher risks and uncertainties [5]. Pavlou and Gefen find that buyers have less trust in both individual sellers and the community of the sellers if they experience product delivery delay, thus influencing actual transactions [39]. It has also been shown that while trust can greatly improve the effectiveness of the market [1], lack of trust in a market, particularly in one characterized by dishonesty and cheating, can lead to market failure [17].

Unlike online marketplaces that provide assurances to consumers for delivering products and attempt to provide on-time delivery, crowdfunding platforms lack risk assurance for *project failure* (i.e. creators fail to deliver products after raising funds from backers) or *reward delays* (i.e. creators do not meet the promised delivery date). Lack of risk assurance might prevent backers who are less likely to take risks [11] from participating. Also, experience of delays might provide a bad experience to backers who had put their trust in projects; this might lead to loss of trust and attrition. Our work seeks to understand influential factors on trust in situations of delay and predictors of the duration of delays, so that we might help creators minimize delays in their crowdfunding campaigns and take necessary action when delays occur. Further, we hope to inform design decisions that help backers in the process of decision making online and to adjust their expectations for potential delays.

To mitigate their risks and uncertainties, existing online marketplaces use reputation systems to enhance trust [40, 25]. Customers write and rate about their past transactions with sellers and future customers use this data to measure the trustworthiness of the sellers. In the absence of such repu-

tation systems in crowdfunding platforms, we are interested in exploring what backers expectations are before backing a project, and how their risk-taking behavior and reaction to delays differ among backers with varying experience.

Donation platforms

In the non-profit donation context, reputation is often an important factor in initial donations [44]; trust and positive interactions are important factors for donor retention. In offline charities, trust, relationship building, expressing gratitude, communicating impact, commitment, satisfaction, and involvement are deemed important [42]. In online settings, like nonprofit donation platforms,completing a project leads to a larger donation [48], and having a positive experience makes donors more likely to return [3].

Unlike donation platforms on which the main motivation for donors is to support a good cause, crowdfunding platforms consist of other motivations for backer participation (e.g. collecting rewards, being part of a community) [15]. Also, backers in crowdfunding platforms have to understand reputations at an individual level rather than at an organizational level, which might make it harder for backers to gauge reputation.

Organizations

Researchers have studied trust among distributed workers [38, 52] and temporary groups [34] at organizational level as well. A case study of Hudson's Bay Company, a large distributed company, suggests that socialization, communication (e.g. establishing, tightening, negotiating communication norms), and participation (e.g. visiting local offices to generate situated knowledge and relationships) were important to establish and maintain trust. Another study of trust among distributed workers suggests that people rely on their first impression of perceived trustworthiness to evaluate co-worker's work since they lack reliable information about their co-worker's progress [52]. In temporary groups, where people with different skillsets work on a complex task until the task is completed, people use varying trusting behaviors to manage issues of uncertainty, risk, and expectations [34]; such as reducing their dependence on others or sharpening the perception of risks in projected actions. As trust is "required as an input condition to stimulate supportive activities in situations of uncertainty and risk [29]," we are interested in understanding how people establish initial trust under uncertainties and maintain trust in situations of delays in crowdfunding platforms.

Crowdfunding

Crowdfunding platforms allow many novice entrepreneurs to realize their dreams. They are not merely technical fundraising platforms but also places for social interaction and community building. Entrepreneurs learn from previous campaigns and seek help from experienced creators [22]. People back others' projects to be a part of a community [15], and creators leverage their social networks to raise funding [21]. Yet, despite the very social nature of crowdfunding, trust, one of the most important aspect in social relationship, has been overlooked by researchers. By understanding trust in crowdfunding, we hope to foster trustworthy behaviors in crowdfunding platform which can help maintaining existing creator-backer relationship, and also introduce new backers to contribute in crowdfunding who were hesitant to join due to mistrust.

Researchers have sought to understand how crowdfunding is changing the work of an entrepreneur. Previous works identified the characteristics of successfully funded campaigns, such as their communication strategies [35], project attributes that predict success [13, 19, 50], in hopes to better help novice entrepreneurs to successfully fund their campaigns.

One chronic problem in crowdfunding platforms is reward delays. Previous research show that more than 75% of successfully funded projects failed to deliver their products on the promised delivery date [36]. Interviews from top 50 funded creators in the popular press showed that reasons for the delays include manufacturing problems, shipping problems, overfunding, and technical and design changes [10]. Building on this preliminary understand of causes of delays, we seek more deeply to understand how backers feel about delays and the factors that might influence their trust.

Previous research showed that funding goal and percent raised can be used to predict delays; however, the analysis was limited in only the Design and Technology project type (N=314) and only used percent funded, number of backers, and funding goals for predicting delays [36]. We conduct an analysis with a larger and more diverse dataset (N=4089) which takes into account all project types and additional project attributes to better understand the attributes that are predictive of the duration of delays. We found that number of reward levels, creators' previous launching experience, number of backers, percent raised, and funding goals are associated with the duration of delays.

Most recently, Kim et al. studied factors that potential donors use to assess credibility of donation-based medical crowdfunding and found that communicative and emotional factors are unique in medical crowdfunding settings [23]. Our work is different from this work in that 1) we study trust in the context of reward-based crowdfunding, which differs from donation-based medical crowdfunding [23], and 2) our focus is on trust in situations of delays, while their study focused on assessment of credibility in the pre-donation stage.

INTERVIEW STUDY

We conducted an interview study to understand factors influencing backer trust in situations of delays in crowdfunding platforms. Specifically, we were interested in factors such as backers' expectations, delay experience, and their trust toward creators. We chose to do an interview study because we sought to have deeper understanding of backers' experience and expectations throughout the project, from before backing to receiving rewards. In the rest of the section, we will discuss the details of the study and the results.

Methods

Participants

We interviewed 14 crowdfunding project backers who have experienced delays on Kickstarter and Indiegogo—two of the most popular reward-based crowdfunding platforms in the
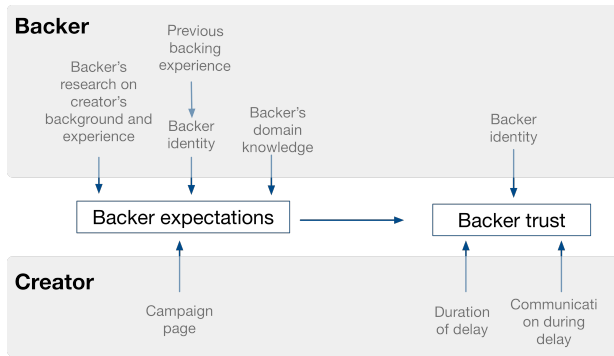
Figure 2. Factors including backer's previous backing experience, backer identity, domain knowledge, research on creator, and creator's campaign page influences backer expectations in terms of delays. Backer's trust is influenced by their expectations, their identity, duration of delays, as well as creator's communications during delays.

US. Project types, as defined by the crowdfunding platforms, included Art, Comics, Crafts, Design, Fashion, Film & Video, Food, Games, Music, Photography, Publishing, Technology, and Theater.

The amount of money the participants pledged ranged from $5 to $250 (M: 70.63, SD: 66.25). The participants backed 7.71 projects on average (SD: 17.42, Max: 68, Min: 1) with eleven participants backing multiple projects while 3 participants only backed one project. The participants' occupations include quality assurance engineer, program director, undergraduate students, graduate students, and professors. Participants' ages ranged from 18 to 41 with 8 females and 6 males. The participants experienced 6.07 months of delay in average (SD: 5.97) ranging from a few weeks to almost two years.

Procedure
We recruited participants through snowball sampling, which allowed us to find participants who have experienced delays. Through semi-structured interviews we asked participants about their profession, three most recent projects they have backed, and their expectations when backing the projects. We asked trust related questions derived from [39], including reliability, honesty, competency, and trustworthiness, which are often cited as base concepts for trust [38, 31, 26, 32]. We also asked about delay experience, their tolerance of delays, as well as importance of on-time delivery. Average interview length was 30 minutes. Interviews took place in person, over the phone, and through video call.

Analysis
We used selective coding and analysis to understand factors influencing trust when delays happen [45]. First, we flagged each instance related to delays, expectations, trust, and creators. After identifying all of the instances, we clustered instances into conceptual categories. Initial coding began after the collection of seven interviews. The emergent themes and the evidence that supports these themes are described in the Interview Results section.

INTERVIEW RESULTS
From our interviews with backers who have experienced delays, we found that factors such as (1) perceived backer role

Variable	Mean	St. Dev.	Min	Max	Median
# Backed					
Supporter	4.25	1.5	2	5	5
Investor	15.2	29.52	1	68	2
Consumer	3	1.87	1	6	3
$ Pledged					
Supporter	70.09	66.56	10	199	40
Investor	66.55	75.37	5	250	35
Consumer	75.7	61.94	10	169	57.5
Delays					
Supporter	4.07	2.78	0	7	5
Investor	5.25	5.75	0	12	3
Consumer	8.63	7.78	0	24	7.5
Year					
Supporter	-	-	2012	2013	2012
Investor	-	-	2012	2015	2014
Consumer	-	-	2013	2015	2014

Table 1. Summary statistics for number of project backed (# Backed), amount of money pledged ($ Pledged), months of delays experienced (Delays), as well as in which year they first backed a project (Year).

identity; (2) creator's communication strategies during delays; (3) duration of delay; (4) backers' domain knowledge; (5) backers' previous backing experience and purpose of using crowdfunding; and (6) creator's background and experience, all influence backers' trust when delays occurred (Figure 2). In the remainder of this section, we will discuss each of these factors in detail.

Backers' role identities affected their perception of delays
Our analysis revealed three main role identities for backers, namely *supporters*, *investors*, and *consumers*. Table 1 shows the summary statistics for number of project backed, amount of money pledged, duration of delays (in month) experienced, as well as in which year they first backed a project for different backer roles. Backers identifying with these roles responded differently to delays. Below we discuss the characteristics of each role:

- *Supporters*. Supporters identified as community members on crowdfunding platforms who are willing to help and support other campaigns. Most of them began backing projects in the early development of crowdfunding (around 2012-2013) when crowdfunding platforms were not as popular as they are now. Supporters understood crowdfunding platforms as a place where creators can pursue their innovative ideas. They used the words "contribute", "support", and "help" to describe their backing behaviors. Supporters backed more projects than other type of backers and experienced shorter duration of delays. This is probably due to the fact that most of them have been in crowdfunding platforms longer than other type of backers and gained crowdfunding knowledge over time.

- *Investors*. Investors were those who see crowdfunding campaigns as start-up projects and were willing to invest their money and take risks. Investors mostly are tech-savvy people, either studying or having background in science or

engineering. They went through more rigorous processes when deciding which projects to back. They frequently used the word "invest" to describe their backing behavior. Similar to supporters, investors experienced relatively short duration of delays. Perhaps, due to their rigorous process in selecting campaigns, their median number of project backed was less than supporters and consumers.

- *Consumers*. Consumers saw crowdfunding as an online marketplace where product and delivery were guaranteed. Most consumers were new to the concept of crowdfunding and they were less aware of the risks such as project failure or product delays in crowdfunding platforms. They often used the word "buy" and "purchase" to describe their backing behavior. Consumers experienced longest delays and that may have be caused by unawareness of risks and lack of crowdfunding knowledge. This may have led them to spend more money on campaigns than other backer types.

Investors and supporters were generally more tolerant of delays and retained trust in the platforms despite delays. They didn't express the loss of trust even after experiencing delays since they understood the difficulties of new product development. A supporter who funded a weather app described his expectations: *"It's not a buyer-seller relationship, it's framed as backer-creator relationship. And I think that's emotionally really different. Because one it tells you that the creator is creating these things, it doesn't exist yet. And you know when someone is creating something that doesn't exist, there is no guarantee it can or will exist."* -P2. Investors and supporters also seem to understand the unexpected roadblocks that creators might encounter along their campaigns as one participant who understands the difficulty of tech project said: *"I understand that sometimes there will be a little hiccups"* -P3.

Investors' decision-making process for which projects to back was more rigorous than that of supporters. They would check the creator's previous experience through online professional networks and assess the feasibility of the project. For example, they would Google a creator's name to check their background, such as current or previous employment and job, and their prior experience in crowdfunding projects, before deciding to back a project. In contrast, supporters would just "support" a product if it seemed "cool" and relevant to them.

Some participants changed their perceived role from supporter to investor due to long delays. A backer who had seen himself as a supporter explained how the delay affected his role change:

> "....I really should've looked up what else they've done or look at the people who were leading the campaign. I wish I had done that. That would have been like a nice one little step of research before than just blindly throwing money at it. So definitely has made me a lot more cynical...I have to think a lot more about who is doing it, what are their qualifications, I basically would do research on them as if I was an investor. Which I kind of don't like. I think with crowdfunding, like I do wanna to be more casual, I don't wanna feel like I have to work

and think like an investor here. I like to just be able to say, I think this is really cool, I like what you are doing, I assume that you are doing it, here is something to help about." -P3

With a better understanding of the inherent uncertainty of design and manufacturing, supporters and investors typically backed crowdfunding projects for non-essential products, such as microwave removable notebook or laser cutting arm, that they didn't need immediately. A supporter who backed an indoor sensor projects described his decision-making process for backing creators:

> "You know I am trying to think of a scenario where I would back a project on Kickstarter because they were creating something that I had an imminent need for on schedule. If there was something like, 'oh, this could really help my [current project on a deadline], well then I don't want a delay'. But I can't really think of a scenario where any reasonable person would use Kickstarter project in that way." -P2

Supporters or investors would back projects or products for entertainment instead of essential goods in their daily life, since they were aware of the risks of delays and the lack of guarantee of receiving the products.

Consumers, on the other hand, were less aware of risks and uncertainties of products being delayed or even made. A backer who pledged $30 to a cardboard tech project explained: *"I guess I thought it was just like more like buy a normal product, right? It's like, you sign up for it, if enough people do it, then they have the capital to make the product, and you get the product. I didn't really realize there's like continual [delays], maybe, I didn't realize how much risk and uncertainty was it."* -P6. Prior experiences in crowdfunding informed expectations for interactions, and consumers often lacked prior crowdfunding experiences.

Many consumers were also newcomer to crowdfunding who perceived crowdfunding platforms as online marketplaces such as Amazon or Ebay, where they would order products and the products would be shipped to them within a promised delivery date. Some newcomers ordered the products for close friends and family for special occasions, such as Christmas or birthdays and failed to receive the product by the date of the special occasion. A backer who backed a cardboard programmable kit described his disappointment in delays

> "The [project] really bugged me. Cause it was like, it was the Christmas present for the kids. So originally it was gonna be Halloween, we couldn't do that, then it's gonna be Christmas, we couldn't do that. So it's kind of like I told my kids that I will give them this thing and it's just sitting there we can't play with it. So that's like really frustrating. It was a gift, so it made it bad." -P6

Not only was the backer personally disappointed, but he perceived the delay as negatively impacting his plans and promises.

When consumers were asked about whether or not they would back some projects in the future, participants reported being

less likely to back something in the future, at least in the same project type of the delayed project (P1, P4, P6). A backer who was not aware of the risks and uncertainties about delays described how unlikely he would back other projects in the future: *"If it's someone I knew or it's like such a great product that I feel like this thing has to get made, then I would [back other projects], probably not otherwise. Cause it's such a pain."* -P6. Delays influenced intention to engage in crowdfunding in the future; however, personal relations or the desirability of a product may still overcome prior negative experiences.

In summary, backer role identity influenced reaction to delay and the varying degree of loss of trust when there were delays. Those who were more understanding of the risks and uncertainties of crowdfunding platform tended to be more understanding about delays and saw creators as trustworthy even after delays. People who regarded crowdfunding platform as an online marketplace were more worried and annoyed about delays.

Communication during delays were important for maintaining backer's trust

Regardless of the backers' perceived role, they all expressed the importance of communication during delays. Most of the backers said keeping them informed about what was going on during delays increased their trust because updates made them less worried about the possible risks and uncertainties (e.g. further delays, creators bailing out). Also, legitimate causes of delays made them more understanding of the delays.

The frequency of the communication was deemed important to the backers. A backer who backed a laser cutting arm product explained his expectations for the updates: *"It [on-time delivery] is important but I care more that I am always updated if something is going on...Not hearing about something for a year, and getting it randomly, is not acceptable."* -P3. Keeping backers informed whenever the creators achieved major milestones or encountered unexpected roadblocks helped reassure backers regarding the process of the project that they backed.

Although some backers were annoyed by the excessive amount of updates sent from the creators, updating backers during delays and being transparent about the current status were important for backers who trusted the creators and pledged money to them.

Not only was regular communication critical for fostering trust, but rich media of communication also helped backers to build trust. Backers gained trust in creators when creators sent behind-the-scene videos or photographs in their updates during delays to show that they were making progress. A backer who backed an indoor sensor project explained how nice it was to receive a video showing bits and pieces of the product: *"They were very good about keeping the backers informed. They made a really good [behind-the-scene] videos and had relatively frequent updates. I thought that was really good, was a nice way to at least communicate that they care and they were working towards something, even it is*

not coming together as quickly as they originally hoped." -P2. Videos and pictures of products or trips to manufacturing sites seemed to help backers gain more trust during the delays, since those could be seen as evidence of progress.

Backers valued not only the frequency and the medium of the communication, they also valued understanding the cause of the delay (e.g. manufacturing and shipping). Backers wanted to know what was going on with the project and what was causing delays. A backer who backed a hardware project explained how he wanted to know about the cause of the delays: *"If something is wrong, I'd like to know what it is. And just let me know that this is gonna take another three months because of this. Then I am fine with it."* -P3. Explanations for the causes of the delays provided backers with an understanding of the reasons for the delays and helped backers set expectations for the extended delivery date for the products.

Backers perceived some explanations as more legitimate than others. For example, backers were more tolerant of external factors that were out of creator's control and saw such delays as inevitable (P2, P6, P12, P14). A backer who waited 4 months to receive his hardware product explained:

> "...but it also has to do with what are [the creator is] communicating with me. If [the creator] says, we ran into some hardware production issues, and we didn't like the quality that we are getting from the manufacturer, and we are working with them to deliver the best product possible. I say ok, I understand that...." -P2

Another backer also explained how one project, which was perfectly on time in manufacturing and shipping, got delayed because the day after the products shipped to the Seattle port from overseas, the port employees were on a strike and the products got stuck at the port until the employees returned to work (P12). Most backers understood the delays and even sympathized with the creators when the causes of the delays could not have been predicted or were beyond creators' control.

Backers did not perceive explanations as legitimate when the reasons provided were in the creator's locus of control. For example, a backer explained his possible reaction to a creator who would take a long vacation prior to the delayed product launch. *"...um, so it is really all about what your excuse is. Because some excuses are legitimate and I can understand that... and if you say 'I am gonna try to have this thing for you in August', and in July you take a month long vacation, and then I am not gonna be thrilled."* -P2.

Sometimes, legitimacy of the explanations was also related to the timeline of the project. One backer who backed a card game explained how the delay was acceptable because the shipping company made a mistake with shipping labels: *"for the [project], that one was interesting. So, they had super well run campaign, and then at the very last minute, um, they had bought from certain manufacturer gone to Amazon to send out, and then Amazon has screwed up labels on, so stuff got delayed"* -P6. Backers were more understanding and forgiving for the delays since the delays were not the creator's fault and also gave credit to the creator who had been running the

campaign very well and had everything kept within the timeline of the initial plan.

In summary, during delays, backers need assurance that the products they have backed are still in progress. Creators need to effectively communicate causes of delays and report their current status to maintain backers' trust. Backers felt creators were more trustworthy when they showed evidence of progress using pictures and videos than with mere text updates. They were also more understanding and tolerant of delays when the causes of delays were out of the creator's control and were clearly communicated.

Duration of delay influenced backer's experience and trust

Backers' thresholds for what they considered to be tolerable delays depended on their perceived role. Delays lasting up to a few weeks were deemed acceptable by all backer types. Consumers were the least tolerant of delays, while supporters and investors were much more tolerant. Although we couldn't quantify based on our interview results what the maximum length of delay deemed tolerable was to each backer, we found that even supporters and investors were frustrated and annoyed when delays lasted more than a year. They viewed long delays as evidence of poor planning and execution on the creator's part: *"You definitely don't want it to be like a year delayed...but I think if as a whole they are pushing everything, for a little bit, for a few months, I don't really mind that cause I won't notice."* -P4.

Long delays could make backers gave up on the creator and the project. One backer of a hardware project experienced a two-year delay described how he almost gave up on the project: *"so the [project] has been delayed for I think like two years now. Which is really really frustrating. Like I don't even expect to get it almost. I think it's coming, but it's just been really obnoxious."* -P6.

Some backers did not care about the delays as much since the estimated delivery date was usually far from when they backed the project (P4, P5, P10). A backer who supported a fashion project explained how long period of time between backing project and receiving products would make her care less about the delays: *"I don't think that [delay] was ever a big thing for me. Cause it's kind of like it's in six months or nine months [from when I backed till I get the product], that just feels far away. Plus you are not gonna be thinking [about the project]..."* -P4.

Backers used their domain knowledge to estimate delays

Backers used their own expertise and domain knowledge to assess the feasibility and difficulty of the project, which also allowed them to assess creator's estimation for delivery. Backers were more tolerant of delays if they perceived the projects as challenging. Further, backers used sources such as peer's opinion or media coverage to understand the difficulty of completing the project.

Backers were more understanding of the delays if the projects appeared technically challenging or required inventing something new that was not currently out in the market. A backer

who backed a solar power bike lock project said that he was more tolerant of the delays because of the difficulty of the project: *"for [project], I mean I am not that annoyed [by delays] because I think that one is like really challenging piece of engineering that they are doing. So, in some sense, delays are more understandable. They are actually trying to invent a piece of hardware, electronics, that hasn't been created before."* -P6. The annoyance of the delays was mitigated by backers' understanding of the technological difficulties of the project.

Backers used different ways to estimate the level of difficulty of the project, which could be a mixture of their own domain knowledge, news coverage, comparison to current market product, as well as peer's opinion. A backer who backed a kinetic energy power charger project mentioned how she measured novelty and complexity of the project: *" [I assess novelty and complexity of the project by looking at] what's out there right now, my knowledge on how hard that thing they are trying to build, and maybe a little word of mouth like if people around me in that fields say 'woo, yeah, that project is a tough one'."* -P7.

Some backers also had difficulties in estimating the feasibility of delivering products on time due to the lack of expertise in that domain. One backer who had no hardware knowledge said why it was difficult for him to assess the estimated delivery date given by the creator: *"...Whereas, I don't have any hardware manufacturing experience, neither did the people who did the [project], so..I don't have a good way of assessing their time estimate."* -P2.

To sum up, backers use various sources to assess the achievability of the project as well as the promised delivery date set by the creators. The more domain knowledge that backers have in the project type seems to help backers to foresee how feasible it is for the creators to deliver their products within the given promised delivery date. Backers also adjust their expectations on on-time delivery based on such assessment, high expectations for the delays would influence less of their trust when there are delays.

Research on creator's background and experience informed backers' estimation of delays and trust

Backers not only used their own domain knowledge to estimate delays, but also used creator's credentials to estimate delays. Backers stated that they used different sources to measure a creator's credentials, including the creator's background and previous experience, whether or not the creator's projects were featured by the crowdfunding platform, and believing in wisdom of crowd by looking at how many other backers had backed the creator's project. Backers thought the more trustworthy the creators were, the higher chances the creators would deliver products on time.

Backers had lower expectations towards on-time delivery when they deemed the creator as lacking in experience or expertise. A backer who backed a weather sensor project stated: *"Whereas, I don't have any hardware manufacturing experience, neither did the people who did the [project name],*

so..Even before they said they were gonna make it in August, it was pretty clear that they weren't gonna make it." -P2.

In contrast, backers were more trusting of creators who they felt had the relevant experience and expertise. Similar to other context such as online dating [16], backers also searched creator's name on the web to verify their credibility. A backer who backed a weather software explained how the creator's credentials and background increased his trust:

> "... if you have some people make software and they say 'one of us used to work at Google' [and] 'one of us used to work at Apple' as designers and developers we really know what we are doing, and we can deliver'. And I would say 'ok.' And if someone says 'I am an independent singer song-writer, I've been recording videos on my computer and posting them on Youtube and people seemed to like it and I wanna make a studio album'. I am gonna say 'I don't know if I wanna be involved in that.'" -P2

Creator's credentials influenced backers' estimation of delivery as well as decision making.

In addition to expertise, some backers perceived creators as more trustworthy and capable of delivering product on-time if the crowdfunding platforms featured their projects. A backer explained his preference to back projects that were featured on the crowdfunding platform: *"...Usually the bigger projects have been vetted [by Indiegogo]. Like if you have large campaign in Indiegogo, Indiegogo will reach out to you [creators]."* -P5. Backers believed that featured projects were more trustworthy and they also seemed to believe popularity as a signal for trustworthiness.

Trust towards creators was also influenced by how many people had backed their projects, the backers took crowd's judgement as a way to measure creator's capability. A backer who backed several hardware projects said: *"I will just browse through things, I usually go to more popular things, just because it's more trustworthy, and it's easier to find. I don't really [have] criteria necessarily. It's just my subjective evaluation."* -P5.

In summary, backers use different sources to measure creator's credentials and that influence their estimation of the delays. Creator's credentials are inferred by their previous experience (e.g. job and crowdfunding campaigns), endorsement from the crowdfunding platforms, and other backer's backing behavior.

QUANTITATIVE STUDY

From our qualitative study, we found that backers, depending on their perceived role identity, are influenced by varying degree of reward delays. Also, they use different measures to estimate delay time, but it seemed that less experienced backers or backers who lack domain knowledge have difficulties in estimating delays. Motivated by our previous findings, we seek to explore project attributes that are associated with duration of delays so that such attributes can be used to help not only creators to prevent delays when they are planning their campaigns, but also help those backers who lack domain knowledge to better estimate potential delays.

Dataset

We combined the dataset originally collected by [13] with the dataset that was provided from the owner of Kickspy.com and TheKickbackMachine.com, websites that capture projects as they are launched. The dataset from [13] has 59,233 successfully funded projects between May 2009 to October 2015, and after matching with the Kickspy and TheKickbackMachine dataset (from July 2009 to October 2013) we were able to get 17,457 successfully funded projects with at least one update or one comment. We combined the datasets for two reasons: 1) Kickstarter changed their user interface so that we are no longer able to see list of backers for each campaign and the dataset provided by [13] has them, 2) The dataset from Kickspy and TheKickbackMachine has campaigns' updates and comments from backers and we needed the updates and comments to identify whether or not campaigns have been delayed. We periodically scraped updates and comments for all the projects and the scraping lasted until May 5, 2015.

Unit of Analysis: Delayed projects

The unit of analysis in this paper is all projects which have been delayed. We used the words "sorry", "apologiz(s)e", and "delay" in updates and the words "delay", " have not receive", "sorry", "apologiz(s)e" in comments to identify delayed projects. After this process, we were left with a dataset of 4,089 projects that were identified as delayed. In terms of the duration of delays, we calculated days passed since the latest estimated delivery date (often times projects have different reward tiers with different delivery dates) given by creators to the latest date either from the matched updates or the matched comments.

With 4,089 projects, we randomly selected 50 projects and manually checked whether or not the projects were actually delayed, as well as the duration of the delays. All the projects that we identified as delayed were indeed delayed. In the time of our visit to the campaign websites, 9 projects still did not deliver the products. Among 41 projects that have delivered products, the mean time difference between our delay length and actual delay length was 3.6 months (SD: 6.72). We found that some of the larger discrepancies were due to the campaigns for which creators delivered much later than May 5, 2015, on which our dataset did not capture comments nor updates.

Measures

Number of reward levels specifies the number of different rewards a project creator provides. Each level is associated with a pledge amount. For example, in a smart tumbler project, the reward for a $30 pledge might be a tumbler that recognizes caffeine while the reward for $99 pledge might be a tumbler that recognizes any liquid. Manufacturing is one of the issues causing delays [10] and having more reward levels leads to different batches for manufacturing which may cause more delays.

Funding goal is the amount of money that a project creator has to raise in order to get the money for their project. The

Variable	N	Mean	St. Dev.	Min	Max
Dependent Variable					
Duration of Delays (*delays*)	4,089	224	314	0.004	16,095
Independent Variable					
Funding goal (*goal*)	4,089	21,999	54,411	1	1,100,000
Project duration (*projectDuration*)	4,089	125.4	112.7	0	793.2
Percent raised (*percentRaised*)	4,089	13.8	650	1	41,535
Number of backers (*backers*)	4,089	826	2,759	2	87,142
Number of reward levels (*rewards*)	4,089	13.8	8.12	2	126
Number of projects backed (*backed*)	4,089	15.87	31.12	0	488
Number of projects created (*created*)	4,089	2.37	4.53	1	65

Table 2. Summary statistics for variables used in our analysis.

funding goal can be as small as a few hundreds dollars to upwards of millions of dollars. Kickstarter platform uses an all-or-nothing crowdfunding model where the project creators either get all the money that they raised if the amount is above the funding goal after the campaign period, or nothing if the amount is below the funding goal. Since many creators are novice entrepreneurs [22] who typically face difficulties in dealing with scaling issues, larger funding goals means having to produce more rewards which may lead to longer delays.

Project duration is time between a campaign end date and an estimated delivery date. It can be used as a proxy measure for the complexity of a project. This suggests an additional hypothesis that long project duration may yield longer delays.

Number of backers is the number of people who have backed the project. Having a large number of backers will require creators to ship larger numbers of rewards, which we hypothesize will lead to more delays.

Percent raised is the ratio between how much the creator has already raised and the funding goal. Because most project creators are novice entrepreneurs who lack effective planning strategies [22], we believe that largely exceeding their initial funding goals will require them to adjust their planning, which may lead to longer delays.

Number of projects created indicates how many projects the creator has launched before the current campaign. We use the number of projects launched as a measure of the creator's level of crowdfunding experience. Previous studies showed that creators learn crowdfunding skills over time [22] and learn from failures [18]; therefore, we hypothesize that more experienced creators will cause less delays.

Number of projects backed indicates how many projects the creator has backed before the current campaign. We hypothesize that creators who have backed other projects and have experienced delays may better understand the unpleasant experience with delays and thus seek to reduce delays in their own projects.

Project types are categories for projects. By default, Kickstarter has 15 project types, including Art, Comics, Crafts, Dance, Design, Fashion, Film & Video, Food, Games, Journalism, Music, Photography, Publishing, Technology, Theater.

Project type	N	% within DP	% DP within type
Art	156	3.82%	11.02%
Comics	266	6.51%	39.88%
Crafts	25	0.61%	15.63 %
Dance	6	0.15%	1.9%
Design	632	15.46%	55.54%
Fashion	164	4.01%	27.38%
Film & Video	588	14.38%	16.12%
Food	169	4.13%	22.18%
Games	876	21.42%	64.27%
Journalism	12	0.29%	16.22%
Music	423	10.34%	10.82%
Photography	57	1.39%	15.24%
Publishing	310	7.58%	18.66%
Technology	356	8.71%	60.03%
Theater	40	0.99%	5.24%

Table 3. The number (N) and distribution of the delayed projects (DP) across types and the percentage of delayed projects within each type.

Hypotheses
We hypothesize that an increase in *Number of reward levels*, *Funding goal*, *Project duration*, *Number of backers*, and *Percent raised* will lead to an increased duration of delays, while an increase in *Number of projects created* and *Number of projects backed* will lead to a decrease in duration of delays.

Analysis
Our analysis strategy involves the estimation of regression models on duration of delays. Our formal model is shown below and includes the full set of variables:

$$delays = \beta_0 + \beta_1 rewards + \beta_2 goal + \beta_3 projectDuration$$

$$+ \beta_4 backers + \beta_5 percentRaised + \beta_6 backed$$
$$+ \beta_7 created + \beta_8 type$$

We used negative binomial regression because duration of delays is an over-dispersed count with conditional variance that exceeds the conditional mean [43].

QUANTITATIVE STUDY RESULTS

Descriptive analysis results

Our descriptive analysis results are shown in Table 2. The mean duration of delay is 7.4 months and the mean funding goal was $21,999. The mean number of reward levels in delayed projects was 13. On average, projects raised 13.8 times of their initial funding goals and had 826 backers. Creators had backed 15 projects and created 2 projects on average. The distribution of the delayed project types are shown in Table 3.

Regression analysis results

Our regression results in Table 4 show that the number of reward levels and the funding goal help explain variations in project delays. The number of backers, percent raised, the number of projects created have a small, but statistically significant association with delay duration as well. Below, we present these results in greater detail using marginal effects for a typical project to facilitate interpretation. For the marginal effects, we hold continuous covariates at their median values and then report the impact of shifting between the 10th and 90th percentiles for statistically significant independent variables. We choose Design as the project type to interpret the regression results because Design projects often face most of the delay problems, such as manufacturing, shipping, design changes, that are mentioned in the previous findings [10].

In our model, the coefficients for funding goal and the number of reward levels are positive and statistically significant. In other words, larger funding goals and larger number of reward levels are associated with more delays in the project. This finding is in line with previous qualitative findings that creators would have difficulties managing and scaling their projects [22, 10]. Figure 3 visualizes predicted duration of delays across different funding goals. For example, with other variables set at the sample median, our model estimates that a design project with $2,176 as their funding goal (10th percentile) would be expected to have 200.38 days of delays (about 6.5 months); a project with $55,000 as its funding goals (90th percentile) would be expected to have 216.42 days of delays (about 7 months).

Figure 4 illustrates the positive relationship estimated by our model between duration of delays and the number of reward levels. For example, setting other variables at the sample median, our model estimates that a design project with 6 reward levels (10th percentile) would be expected to have 197.94 days of delays (about 6.5 months); a similar project with 18 reward levels (90th percentile) would be expected to have 214.38 days of delays (about 7 months).

The model also estimates that duration of delays increases as the number of backers and percent raised increases, but the point estimates are very small and the relationship are not substantively important. For example, setting other variables at the sample median, we expect that a Design project with 103 backers (10th percentile) would have 202.23 days of delays (about 7 months) whereas a similar project with 2186 backers (90th percentile) would have 207.78 days of delays (also about 7 months). In other words, more backers may

	Dependent variable
	days delayed
rewards	0.0067***
	(0.0025)
goal (in thousands)	0.0015***
	(0.00028)
projectDuration	−0.00011
	(0.00014)
backers	0.000013**
	(0.000005)
percentRaised	0.0000079***
	(0.0000022)
backed	−0.00018
	(0.00049)
created	−0.0073*
	(0.0043)
project type fixed effects	Yes
(Intercept)	5.239***
	(0.047)
N	4,089
Log Likelihood	−26,096.923
θ	1.101*** (0.022)
AIC	52,240
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 4. Results of negative binomial regression model estimating days delayed.

help explain variation in delay duration, but the observed association is so small as to be almost meaningless.

The coefficient for number of projects created is negative and marginally significant in our model, indicating that the experience of creating projects is associated with shorter delays. Our model estimates that a design project with a creator who had created one prior project (10th percentile) would be expected to have 203.27 days of delays (about 7 months) whereas an identical project initiated by someone who had already created four prior projects (90th percentile) would be expected to have 198.90 days of delays (about 6.5 months).

DISCUSSION

Greater uncertainties and risks in inventing or creating a new product set crowdfunding platforms apart from other online marketplaces and donation platforms [22]; thus backers' expectations towards delay and trust in situations of delays also differ from other platforms. Unlike in online marketplaces where shipping is one of the main problems for delays, there are other issues such as design, development, manufacturing, and shipping in crowdfunding. As a result, backers who are less aware of such uncertainties and risks are generally less aware of the possibility of delays. Those who are more aware of such issues use their own domain knowledge to expect and estimate potential delays. In situations of delays, factors such as 1) backer role identity, 2) communication strategies during delays, 3) duration of the delay, 4) backers' do-
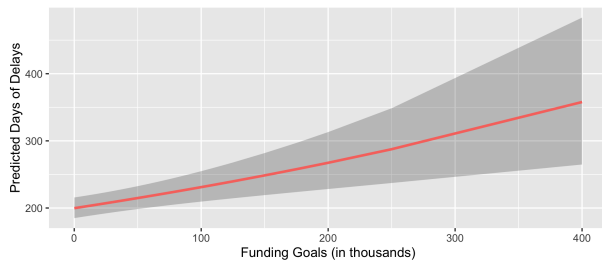
Figure 3. Estimated values for design projects showing the predicted days of delays using our model. X-axis is the funding goal while holding all the other variables at the sample median.
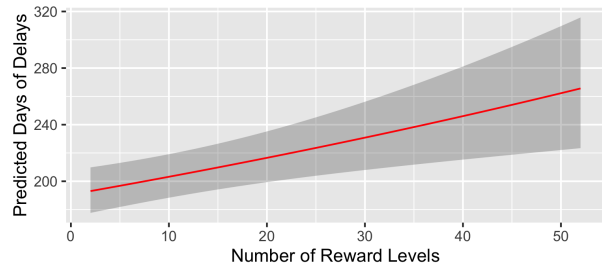

Figure 4. Estimated values for design projects showing the predicted days of delays using our model. X-axis is the number of reward levels while holding all the other variables at the sample median.

main knowledge, and 5) research on creator's credentials influenced backers' expectation and trust.

Although previous research on crowdfunding sought to understand predictive factors for successfully funded projects [19, 13, 50], few studies have considered delivery delays. Being able to estimate delays a priori can help both creators manage campaigns and backers manage expectations. Our regression results show that the number of reward levels, funding goal, creator's previous launching experience, project types, and number of backers help explain the duration of delays.

In the rest of the section, we discuss design considerations that may help backers in the process of decision making and adjust their expectations for potential delays. We then discuss implications for helping creators to plan their campaigns to minimize their delays, and supporting creators to take necessary actions when delays occur. Finally, we discuss how we can improve existing interface designs or policies on crowdfunding platforms to provide backers a better experience.

Implications
Our core findings around backer role identity, communication during delays, crowdfunding policies and accountability have implications for understanding and designing crowdfunding platforms and online interactions more generally.

Backer Role Identity
Backers have different perceived roles that informed their views on delays. Both *investor* and *supporter* type of backers understand the risks and uncertainties in crowdfunding platform and are much more tolerant of delays. In contrast, *consumer* type of backers often see crowdfunding platforms

as typical online marketplaces such as Amazon or eBay, and they are less tolerant of delays and might yield high attrition rate.

As crowdfunding is becoming more and more popular [30], crowdfunding platforms should be sensitive to backers' *crowdfunding literacy*. While platforms are beginning to include notices about the underlying risks (i.e. creators fail to deliver product, late delivery) or the primary intention of their platforms (i.e. helping creators to realize their dream; but there is no guarantee they would succeed), literacy for many platform participants remains low.

Consumers in particular need help to understand the risks and uncertainties based on which to adjust their expectations accordingly. For example, a backer support tool which shows potential delays and delay estimations based on project attributes might help a backer's decision making process. Also, reputation systems based on creators' previous delays and failures can be useful for helping backers find "more trustworthy" creators.

Although crowdfunding platforms emphasize "crowd due diligence" [2], which expects backers to research the project and the creator before backing, we argue that there should be more information and previous crowdfunding histories shared within the platforms so that the backers could do less additional work (e.g., Google a creator's name) outside the crowdfunding platforms.

Our findings suggest that different role identities have varying trust attitudes even within the same context or domain, and socio-technical solutions need to meet different user group's needs. This builds directly on prior work on the importance of not only context [9] but also on different user groups in the same context. Designers often overlook the implications of the extra work required of other user groups in multi-user applications [20]. To foster trustworthiness in the system, we need to design interfaces that provide information tailored to different user groups to help them best make informed decisions without having to perform additional work.

Communications during delays
Effective communications during delays was deemed important for backers as it: (a) helped them resolve information asymmetry; (b) provided reassurances given uncertainties; (c) allowed them to set their expectations for possible upcoming roadblocks of the projects. Our findings show the richness of the communication medium, the frequency of the updates, and the legitimacy of reasons for the delays influenced backers trust.

Crowdfunding platforms can provide ways to remind creators to upload videos or pictures when cases of delays are detected through campaign updates or comments. Backers found creators to be more trustworthy when the creators showed behind-the-scene videos or pictures as evidence that they were making progress. However, some backers did mention that sometimes excessive updates felt like spam. Creators, therefore, should send updates sparingly by sending updates whenever they achieve a certain milestone or hit a roadblock but have detailed information to provide.

In-process communication can mitigate information asymmetry problems among people who have mistrust or potential loss of trust. Reputation systems are often used for prediction about future behavior during pre-transaction or pre-interaction stage [25]; we believe that in-process communications can be used as another risk management technique during the interaction process.

Duration of delay
Duration of delay also influences backers trust especially when there are long delays. Short delays such as a few weeks or a few months were considered by backers as within the margin of errors of the creators' estimated delivery dates, but long delays made backers question the competency of the creators or the preparedness of the project itself.

Similar to previous research tools that help creators predict their success in raising fund [19, 13, 50], crowdfunding platforms should help creators to estimate potential delays and the duration of delays with their campaign attributes. Minimizing delays can help creators who want to have subsequent projects launched on the platform avoid losing potential recurrent backers with long delays they inadvertently create.

However, we also have to consider the creator's needs when designing a support tool for creators to prevent delays or mitigate consequences of delays. For example, creators may not follow advice to reduce the funding goal to minimize delays, since they may prioritize additional funds over some delays caused to backers. Without compromising creators' needs, one suggestion is to create support tools to assist creators to set more conservative estimated delivery dates for reward types preferred by consumers and conservative number of rewards based on manufacturing capabilities. Further, since the tolerance of delays differ across backer roles, in cases of delays a support tool may assist creators to prioritize shipping to consumers over investors or supporters. However, creators should be very transparent and honest about adopting such practices to all the backers.

Crowdfunding Policies and Accountability
Crowdfunding platforms specifically claim that they are not liable of projects' performance or punctuality in their terms of use, but who should be held accountable when there are delays or even failures to deliver products? Some backers mentioned that they are concerned about accountability, and suggest that crowdfunding platforms should give more assurances to backers by overseeing projects.[1] As one backer expressed: *"I am mad if something does go wrong, I am kind of mad at them [creators], but it's also like you put your trust in them, it's not they guaranteed to do, they are supposed to, but they are not, they could fail...I think, my only issue is that Kickstarter and Indiegogo does nothing to help [such as business plan or progress check] with them, when they should."*

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[1]A week before the submission, Indiegogo announced to team up with company called Arrow to help with design tools, prototyping services, manufacturing support, supply chain management assistance for hardware projects to deliver products in a timely fashion. See http://techcrunch.com/2016/05/20/indiegogo-teams-up-with-arrow/

Due to the lack of liability in crowdfunding platforms, some people would prefer to wait until a crowdfunding campaign is successfully funded and the creators launch their own website to purchase the product. They feel much more comfortable purchasing from the website since they are protected by consumer rights. As one participant mentioned: *"I think that you want people to continue using crowdfunding, but I think that I wanna be the person who buys it from the website after it's funded [because it felt more legitimate]..."*

If many backers start following such strategies, however, less and less projects will be able to reach their funding goals since people are waiting for others to take risks. As a result, less creative and innovative projects may be pursued and realized. Crowdfunding platforms, instead of merely stating they are not responsible for any disputes between creator and backer, can develop reputation systems with reward or penalties with regard to delay and failure that can help to mitigate potential dispute by providing backers more information about creator's crowdfunding history as well as hold creators more accountable for their actions.

Platforms' policy should benefit both sides of agents and especially provide risk management mechanisms for parties that are more prone to risks. This applies not only to crowdfunding platforms, but also to other platforms such as e-commerce, crowdsourcing marketplaces [33]. One starting place may be to design solutions that help both sides assess the risks and benefits involved, so that outcomes on the platform more realistically represent the wishes of parties to avoid market inefficiencies and failures due to the lack of helpful information for making informed decisions.

Limitations and future work
In this work, our study of trust on crowdfunding platforms is limited to situations of reward delays. Future work will attempt to build a deeper understanding of issues of trust on crowdfunding platforms more generally.

Another limitation of our dataset is the estimation of the duration of delays. Estimation errors were either due to the lack of updates or comments or nuanced comments that were difficult to detect with text matching. Therefore, in addition to our negative binomial regression analysis to estimate days of delays, we also used logistic regression, which is more robust to such errors, to check predictors for high delays in the duration of delays. Predictors for delays in both regression results were identical except *backers* and *created* were not significant in logistic regression. We need further investigation to understand this difference.

Lastly, within reward-based crowdfunding platforms, there likely exists backers who may support their friends, family, or weak-ties solely due to altruism. However, understanding altruism, the practice of acting generously towards others who have been generous to them, or anyone, in the past, was out of the scope of this paper. As people are more willing to trust an altruistic person than a non-altruistic person [6], future research will explore how reputation of 'altruistic behavior' might influence trust of creators.

CONCLUSION

In this paper, we studied backer's trust in situations of delays and predictors of delays in crowdfunding platforms. We found that a rich set of crowdfunding specific factors that influenced backers' trust, including backers' role identity as well as domain knowledge, backer's research on a creator's background, creator's communication during delays, and the duration of delay. Our regression analysis with 4089 delayed projects showed that the funding goal, number of backers, number of reward levels, creators previous crowdfunding experience, and project types are predictors of for the duration of delays.

This research contributes to our knowledge about trust in situations of delays in crowdfunding and provides initial insights for how we should design future computer supported cooperative systems for crowdfunding. These insights are important for expanding the number and breadth of people who participate and the new ventures realized. This work sets the stage for new CSCW research in trust in emerging CSCW contexts.

By helping creators to reduce delays and building trust among creators and backers, more backers may contribute to crowdfunding projects to help novice entrepreneurs, engineers, designers to bring innovative and creative ideas to the world.

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