



What Determines the Success of Charitable Crowdfunding Campaigns? Evidence from China During the COVID-19 Pandemic

Xiao Pan¹ · Lin Dong²

Accepted: 5 January 2023 / Published online: 30 January 2023
© International Society for Third-Sector Research 2023

Abstract The dramatic rise of charitable crowdfunding has changed the landscape of fundraising and giving. Little empirical work, however, has been done to explore critical factors that are associated with successful charitable crowdfunding campaigns run both by formal charities and non-charities. To advance the literature on donation-based charitable crowdfunding, we draw on a unique dataset of 427 COVID-19 crowdfunding campaigns in China, examining whether and how external and internal quality signals are related to crowdfunding success measured by total donation amount. Our results show that crowdfunding success is positively associated with internal signals (updates and predefined duration), whereas the role of external signals (platform and award) is less certain. While we find a positive relationship between award information and funding success, informal campaigns using an alternative medium seem to generate more donations than formal campaigns using authorized platforms. The implications of this study for theory, practice and policy are also discussed.

Keywords Charitable crowdfunding · COVID-19 · Signaling · China · Public-fundraising organizations

✉ Xiao Pan
panxiao@shufe.edu.cn

Lin Dong
donglin@hust.edu.cn

¹ School of Law, Shanghai University of Finance and Economics, 777 Guoding Road, Yangpu District, Shanghai 200433, China

² School of Sociology, Huazhong University of Science and Technology, 1037 Luoyu Road, Hongshan District, Wuhan 430074, Hubei Province, China

Introduction

Crowdfunding has become an important funding option both in the context of philanthropy and investment. In lending- and equity-based crowdfunding, supporters provide funding with the expectation of a financial return; in the donation- and reward-based models, supporters receive nothing tangible in return, but non-monetary rewards will be offered to the funders of reward-based crowdfunding (Mollick, 2014; Paschen, 2017). The focus of this study is on donation-based charitable crowdfunding that adopts the “pure donation model,” in which donors have no expectation of any tangible or intangible rewards (Paschen, 2017; Salido-Andres et al., 2021), as opposed to crowdfunding with a mixture of donation- and reward-based nature (Van Teunenbroek, 2019).

The current study defines charitable crowdfunding as requesting monetary donations from the public by charities or non-charities (e.g., informal groups and socially conscious individuals) through online mediums for a charitable or broader social cause that benefits the community generally. Moreover, the Chinese case exemplifies a pure donation-based crowdfunding model where a *keep-it-all* mechanism is adopted. The keep-it-all approach allows the fundraiser to retain all funds raised even if the campaign fails to meet its fundraising goal, which is different from an all-or-nothing approach where the fundraiser keeps the funds only when the goal is achieved (Cumming et al., 2020; Best et al., 2013).

Charitable crowdfunding is a suitable financing tool during times of emergency and crisis due to its key attributes: first, its project-based nature (Van Teunenbroek, 2019) would allow the fundraiser to target the specific needs of particular individuals and groups; second, charitable crowdfunding is characterized by low costs, speedy

implementation and wide audience reach (Mayer, 2022). Owing to these advantages, charitable crowdfunding has become an important means of providing financial assistance to disaster-relief efforts (Behl & Dutta, 2020; Mejia et al., 2019; Riccardi, 2016). More recently, the COVID-19 outbreak in 2020 has witnessed a surge in crowdfunding campaigns (Elmer et al., 2020; Igra et al., 2021; Moine & Papiasse, 2020; Osili et al., 2021), quickly channeling philanthropic resources to the fight against the pandemic globally.

Over the past few years, charitable crowdfunding has given rise to an outpouring of small contributions made by ordinary Chinese people, especially the younger generations (UWW & Bain, 2019), to various crowdfunding projects addressing pressing social needs and issues. As a response to the outbreak of COVID-19 in early 2020, a significant number of crowdfunding campaigns were carried out not only by public-fundraising organizations (PFO, *gongmu zuzhi* 公募组织) (FIDC, 2020), but also by non-charities, notably university alumni associations. For purposes of this study, PFOs denote both charitable organizations defined by the 2016 Charity Law and Red Cross societies governed by the Law of Red Cross Societies that have obtained public-fundraising status (PFS, *gongkai mujuan zige* 公开募捐资格). The Ministry of Civil Affairs (MCA) and local civil affairs departments, as the primary charity regulator, are vested with the power to grant PFS.

Currently, there are two requirements for a lawful (and formal) charitable crowdfunding campaign: (1) the fundraiser is a PFO and (2) the crowdfunding platform has been authorized by the MCA to publish charitable fundraising appeals (“*authorized platform*”). Informal charitable crowdfunding run by non-charities via unauthorized mediums such as social media, however, still exists. Both formal and informal charitable crowdfunding played an active part in the battle against the pandemic in early 2020.

Against this backdrop, our study investigates crowdfunding campaigns at early stages of the pandemic in China run by PFOs and university-related fundraisers. These campaigns aimed to provide emergency relief to Hubei, the epicenter of the outbreak, and many other affected areas. We seek to address two main research questions: (1) *What factors are associated with the success of COVID-19 crowdfunding campaigns in China?* and (2) *How far the findings in other crowdfunding contexts may hold true in pure donation-based charitable crowdfunding?* To answer them, we use the lens of signaling theory (Spence, 1973, 2002) to hypothesize whether and how external and internal quality signals (Mavlanova et al., 2016) are related

to crowdfunding success, and employ OLS regression to analyze a unique dataset of 427 crowdfunding projects launched from January to March 2020 on both authorized and unauthorized platforms.

Our research contributes to the literature in several ways. First, this study enriches the emerging literature on donation-based charitable crowdfunding (Salido-Andres et al., 2021), which has received far less attention than equity- and reward-based crowdfunding (Zhang et al., 2020). While our analysis is based on data from COVID-19 crowdfunding campaigns, the current study not only contributes to theory building in the field of charitable crowdfunding more generally, but also raises broader questions that merit further investigation. Notably, our study is the first we know of to empirically examine both *formal* and *informal* charitable crowdfunding campaigns in China. Based on a theoretical framework that takes into account the democratized nature of charitable crowdfunding, our work suggests a promising direction to further explore the role of external and internal signals in the donation-based context.

Second, by paying equal attention to formal and informal charitable crowdfunding, our study also adds an important yet under-studied perspective to existing literature that largely focuses on traditional charities as the project initiator (Salido-Andres et al., 2021). Recent research in the Chinese context has been devoted almost exclusively to campaigns conducted by PFOs through authorized platforms, either alone or cooperatively with non-charities (Ba et al., 2020; Tsai & Wang, 2019; Zhou & Ye, 2019).

Finally, despite the increasingly wide use of charitable crowdfunding in emergency situations, empirical studies on its success factors remain relatively scarce, and attention has often been given to campaigns launched on a single platform in the United States (Mejia et al., 2019; Ho et al., 2021). Over the past few years, online crowdfunding has played a crucial role in emergency relief in China (FIDC, 2021). By investigating COVID-19 crowdfunding campaigns on 12 authorized platforms and one unauthorized medium in this important research context, our study provides new insights into crowdfunding for emergency response.

In the following sections, drawing on multiple literature streams, we first develop our theoretical framework and hypotheses. We then describe the sample and research design. After presenting the results, we discuss our key findings in the light of the theoretical framework of this study, and their implications for practice and policy are highlighted.

Literature Review and Hypothesis Development

To develop a theoretical framework that sheds light on the effects of signaling in donation-based charitable crowdfunding (see Fig. 1), this section draws insights from different streams of literature on signaling, crowdfunding and fundraising. Four hypotheses are formulated accordingly.

Defining Crowdfunding Success

Crowdfunding success can be measured along multiple dimensions (Ahlers et al., 2015). Given that crowdfunding projects in our sample adopted a keep-it-all approach, following previous research on online giving (Bhati & McDonnell, 2020; Saxton & Wang, 2014), we use *total donation amount* as the success measure. This measure calculates the sum of total donations raised by each crowdfunding campaign and captures the support a fundraiser is able to gather from the crowd.

Applying Signaling Theory to Charitable Crowdfunding

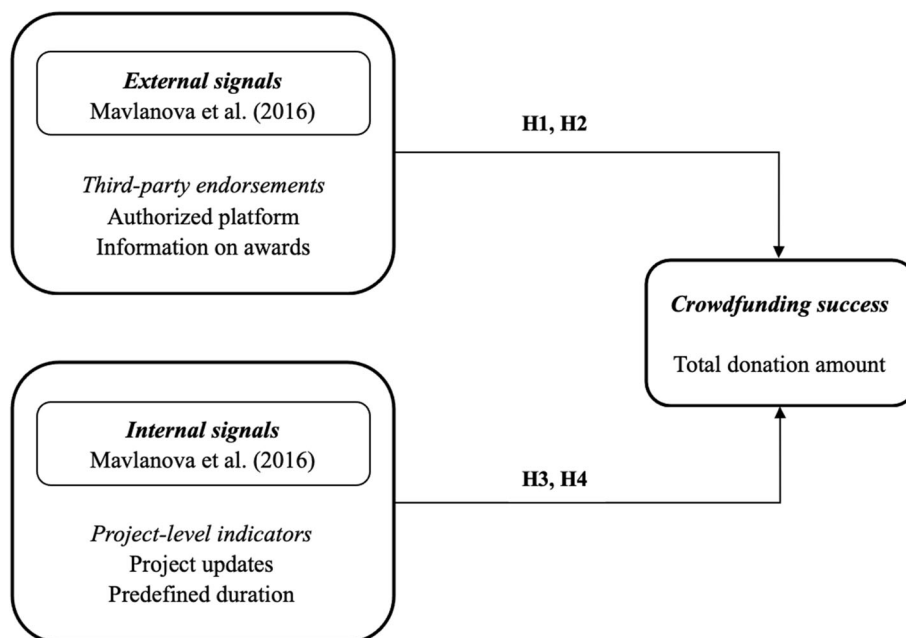
Signaling theory analyzes how *observable* characteristics (signals) can be used by signalers to communicate information about their *unobservable* attributes to the other party with less information (Spence, 1973, 2002), thus reducing information asymmetry between the insider and the outsider (Connelly et al., 2011). To achieve that purpose, a signal should be noticeable and comprehensible to outsiders (Ahlers et al., 2015; Mavlanova et al., 2016).

Signaling theory has been applied as an analytical tool to different contexts, including, among others, seller–buyer relationships in marketing literature (Kirmani & Rao, 2000) and entrepreneur–investor relations in entrepreneurship literature (Connelly et al., 2011). With the advent of the digital age, the first line of research has been extended to the e-commerce environment (e.g., Mavlanova et al., 2016; Wells et al., 2011). Similarly, the role of signaling in online crowdfunding has been extensively studied in recent years, especially in the contexts of reward-based (e.g., Davies & Giovannetti, 2018; Huang et al., 2021) and equity-based crowdfunding (e.g., Ahlers et al., 2015; Kleinert et al., 2020).

Signaling may also play an important role in charitable crowdfunding. Due to the lack of face-to-face interactions and shorter project durations (Courtney et al., 2017), the information asymmetry problem that is prevalent in traditional fundraiser–donor relationships (Gordon et al., 2009) can be exacerbated in crowdfunding context. Similar to small investors who typically have neither the incentive nor the ability to fully evaluate their investments (Ahlers et al., 2015), crowdfunding donors are often small donors who are not in a good position to assess project quality (Hoos, 2021).

However, to date very little research has attempted to apply signaling theory to pure donation-based charitable crowdfunding. Ho et al. (2021) discussed how signals originating from campaign- and fundraiser-level attributes as well as from donor–fundraiser interactions influenced the success of food-aid crowdfunding campaigns on GoFundMe during the COVID-19 pandemic. Attempts were also made to examine the success factors of

Fig. 1 Theoretical framework



charitable crowdfunding with a reward-based feature (Bukhari et al., 2019) and medical crowdfunding (Chen et al., 2022) from a signaling theory perspective. Despite these efforts, there is still a need to develop a more refined theoretical framework for understanding the role of signaling in charitable crowdfunding.

External and Internal Signals in Charitable Crowdfunding

Mavlanova et al. (2016) investigated the effects of external and internal quality signals on buyers' purchase intention in online businesses. We apply the theoretical approach developed in their work to donation-based charitable crowdfunding. In the study of Mavlanova et al. (2016), *external* signals are defined as higher-cost signals in the form of third-party endorsements (e.g., verification seals), whereas *internal* signals refer to lower-cost signals that are independently produced by online sellers (e.g., website policies).

This theoretical framework is particularly suitable for charitable crowdfunding. Charitable crowdfunding has been used by a wide variety of fund-seekers (Salido-Andres et al., 2021), including organizations that are not accorded charitable status and individuals (Osili et al., 2021). This echoes the trend toward a democratization of access to funds that can be observed in other crowdfunding contexts (Mollick & Robb, 2016). Yet charities still have the advantage of utilizing external signals provided by the regulator, and so do some crowdfunding platforms. Therefore, it is of particular importance to explore whether and how external and internal quality signals are associated with crowdfunding success in this increasingly democratized fundraising landscape.

External Signals

External signals are more costly to obtain due to the time and effort required (Mavlanova et al., 2016). The costs of signaling, however, are lower for high-quality signalers than for low-quality ones (Connelly et al., 2011; Spence, 1973). Hence, external signals produced by third-party endorsements will credibly increase trustworthiness and indicate higher quality (Mavlanova et al., 2016).

In the charitable giving context, endorsements from the regulator may serve as an effective external signal. A typical example is the charitable status granted by government regulators, which is costly to acquire and maintain but can be easily noticed by donors (Handy, 2000). The positive impact of fundraisers' certified charitable status on total donation amount has been found in disaster-relief crowdfunding (Mejia et al., 2019).

Similarly, in the case of COVID-19 crowdfunding campaigns in China, the "authorized" status of a crowdfunding platform may function as an external signal. As of March 2020, the MCA had selected 20 authorized platforms (MCA, 2018). A potential donor can easily verify the "authorized" status displayed on a platform via announcements made by the regulator or Charity in China (cszg.mca.gov.cn), making it a more valuable external signal (Mavlanova et al., 2016). Taken together, the use of authorized platforms may be linked to greater crowdfunding success. Accordingly, we posit:

Hypothesis 1 (H1) The use of authorized platforms by the fundraiser is positively related to crowdfunding success.

Moreover, a charity's past achievements could fulfill a signaling function (Handy, 2000). For the same reasons discussed above, awards granted by government regulators show official recognition of achievements and can be used as an external signal. We thus hypothesize:

Hypothesis 2 (H2) Providing information on awards granted by the regulator is positively related to crowdfunding success.

Internal Signals

An internal signal conveys information about the signaler's own promises, and is less costly to produce (Mavlanova et al., 2016). In charitable crowdfunding, the most important promise a fundraiser could make to donors is to effectively deliver desired outcomes. Specifically, project-level indicators can be employed by fundraisers to signal their commitment.

First, updates on fundraising progress and fundraisers' endeavors to achieve the purpose can be an important project-level indicator. Prior empirical work largely in the reward-based setting suggests that a higher frequency of project updates during a crowdfunding campaign is associated with a greater likelihood of success (Beier & Wagner, 2015; Borst et al., 2018; Kunz et al., 2017; Liu et al., 2021; Mollick, 2014). In the charitable crowdfunding context, Mejia et al. (2019) found that posting updates that show the progress of work increased donations to disaster-relief campaigns, since it indicates the fundraiser's effort and ability to fulfill the promise.

Mavlanova et al. (2016) have noted that the effectiveness of internal signals (i.e., website policies) in e-commerce may be impaired by the uncertainty about whether the policies will actually be implemented. This may not be a major issue with respect to project updates, which clearly show the potential to deliver promised results. We formulate therefore:

Hypothesis 3 (H3) The number of project updates posted by the fundraiser during the campaign is positively related to crowdfunding success.

Further, the chance of funding success is found to decrease with longer campaign durations (Davies & Giovannetti, 2018; Kunz et al., 2017; Mollick, 2014) mainly in reward-based crowdfunding. The possible explanations could be that donors perceive a longer duration as an indicator that fundraisers lack confidence in the project (Mollick, 2014) and that the project will not lead to desired outcomes quickly (Kunz et al., 2017). On the contrary, donors may associate a shorter predefined duration with good prospects of achieving the expected goal soon. Again, the issue of uncertainty (Mavlanova et al., 2016) may not be significant, because a predetermined duration is unlikely to be altered afterwards. Accordingly, we propose that:

Hypothesis 4 (H4) A shorter predefined campaign duration is positively related to crowdfunding success.

Method

Sample and Data Collection

The crowdfunding campaigns covered in our sample were launched over the period from January 2020 to March 2020, with the aim of providing emergency relief to front-line healthcare workers and other vulnerable groups. Our data collection started in October 2020 and continued until April 2021. We eliminated 19 projects that set a campaign duration of more than seven months, because they were likely atypical compared to other projects (96%) with an average length of around 40 days. The result was a sample of 427 campaigns. Our sample covers two types of crowdfunding campaigns launched through various platforms (see Table 6 in Appendix A for an overview). Different strategies have been applied to collect data.

The first part of our sample includes 278 *formal* campaigns launched through 12 authorized platforms by PFOs (among which three campaigns were run by Red Cross societies), which we refer to as “*PFO campaigns*.” We ran systematic searches on all authorized platforms using a variety of keywords, including “pandemic (*yiqing*),” “COVID-19 (*xinguan*, *xinguan feiyan*, *xinxing feiyan*, *xinxing guanzhuang bingdu*, or *bingdu*),” “combating COVID-19 (*kangyi*, *zhanyi* or *fangyi*),” “rescuing (*chiyuan*, *zhiyuan* or *jiuyuan*),” and “healthcare workers (*yihu*, *baiyi zhanshi* or *nixingzhe*).”

The 278 projects received individual donations only. Projects on Gongyibao (gongyibao.cn) were excluded,

because offline donations made mainly by institutional donors were added to the total donation amount. We were unable to deduct offline donations and obtain an accurate amount of individual donations, as neither the platform nor the fundraiser disclosed the specific amount.

The second part of the sample includes 149 *informal* campaigns run by mostly university alumni associations and other university-related fundraisers (foundations and student organizations), which we refer to as “*university-related campaigns*.” They constitute an alternative crowdfunding method, as fundraisers launched and promoted the campaign through their WeChat official accounts (*gongzhonghao* 公众号) in lieu of crowdfunding platforms. WeChat is a leading social messaging app in China, and its official account can be used to send posts to followers that are also accessible to the public. The fundraisers of 90 projects (60%) were unregistered organizations, and none of the registered fundraisers (nonprofits registered with civil affairs departments) had obtained PFS by the time they launched the campaigns. In most university-related campaigns, donations went directly to personal accounts, such as personal WeChat, Alipay or bank accounts.

Some university-related campaigns specified that donations from the public (*shehui renshi* 社会人士) would be welcome. Also, after an official account post is shared multiple times by WeChat users via WeChat Moments (“Friends’ circle”) and private WeChat groups, it can eventually reach out to the general public. Therefore, many projects received considerable donations from the public, as shown by the disclosed information.

We conducted extensive keyword searches on Sogou (weixin.sogou.com), the default search engine for WeChat official account posts. For each university-related campaign, we collected: (1) the post that called for donations, i. e., the fundraising appeal that contains a project description, and (2) the post or posts that disclosed fundraising progress. Some campaigns disclosed the donation amount raised at different stages separately, so we added them up to get the data.

To ensure the accuracy of data, we excluded university-related campaigns that received institutional donations which could not be deducted due to incomplete information. Yet we included 23 campaigns providing detailed information about institutional donations, after we manually deducted them from total donations. Moreover, 28 projects received *group donations*, meaning donations gathered from a group of people (e.g., alumni of the same class, colleagues) and made by one individual. To get accurate descriptive data on average contribution per donor, we manually deducted group donations from the total amount.

Analytical Strategy

The dependent variable of our study is *Total donation amount*. As shown in Table 1, we operationalize four independent variables: *Platform* (H1), *Award* (H2), *Updates* (H3) and *Predefined duration* (H4). We adopt three project-level control variables that may influence crowdfunding success (see Table 1). First, starting media campaigns swiftly may positively affect donors' intention to give to disaster-relief appeals (Oosterhof et al., 2009). We would expect similar effects of a quick response in COVID-19 crowdfunding campaigns, and control for the possible impact of *Starting month* accordingly. Second, given that Hubei was the epicenter of the outbreak, we employ *Supported area* to control for the geographical effect (Mollick, 2014; Ho et al., 2021). Finally, following prior research (Liu et al., 2021; Mollick, 2014), we control for the *Fundraising goal*. *Fundraising goal* is operationalized as a categorical variable, since the majority of university-related campaigns do not have a preset target. We apply a log transformation to *Updates* and *Predefined duration* to adjust right-skewed distributions.

H1 and H3 are tested with our full sample. H2 and H4 test the effects of *Award* and *Predefined duration* in PFO campaigns (subsample), as all of them were launched by registered charities with a predefined campaign duration. As histograms in Fig. 2 show, the raw data in all samples shows highly right-skewed distributions of *Total donation amount*, suggesting that a relatively small number of

projects received disproportionately large amount of donations.

Three steps were followed to achieve normal distributions and identify possible outliers (see Table 2 for a summary of outlier removal process). We first transformed the data using the natural log of dependent variable to reduce the right skewness of distribution. Histograms in Fig. 2 show left-skewed distributions after log-transformation in both samples. Next, we employed Box plot (Aguinis et al., 2013) to identify outliers that lie beyond 1.5 interquartile ranges (IQRs) above the third quartile or below the first quartile. We removed smallest values below the lower outlier threshold and found no values above the upper threshold. Lastly, we used Q-Q plot to detect additional outliers to produce approximately normal distributions (see Fig. 3 in Appendix B).

Ordinary least squares (OLS) regression was employed after the afore-mentioned steps to test our hypotheses, because the dependent variable, *Total donation amount*, is a continuous measure (Bhati & McDonnell, 2020; Saxton & Wang, 2014). We run regressions in six models, including regressions for the full sample and subsample. We conducted multiple tests to examine the presence of multicollinearity in all models: the maximum variance inflation factor (VIF) values are 2.55 and 1.96 for the two samples, respectively, suggesting no strong multicollinearity in our models; the largest condition index for each model ranges from 6.78 to 8.29, indicating that multicollinearity is not a significant issue. For a final check, residual plots revealed

Table 1 Variables and descriptions

Variable	Description
<i>Dependent variable</i>	
Total donation amount (RMB)	Total amount of individual donations generated by the project
<i>Independent variables</i>	
Platform (H1)	Dummy variables for two categories: authorized platform (reference category); WeChat official account
Award (H2)	Awards or 4A/5A ratings granted by civil affairs departments Dummy variables, 0=no award information provided, 1=award information provided
Updates (H3)	Number of times an update is posted during the campaign
Predefined duration (H4)	Number of days a project runs predetermined by the fundraiser
<i>Control variables</i>	
Starting month	The month when the campaign was launched Dummy variables for three categories: January (reference category); February; March
Supported area	The area(s) supported by the campaign Dummy variables for three categories: Provinces other than Hubei (reference category); Including Hubei; Unspecified
Fundraising goal (RMB)	Preset fundraising target (if any) Dummy variables for five categories: <500,000 or unspecified (reference category); 500,000–1,000,000; 1,000,000–5,000,000; 5,000,000–10,000,000; >10,000,000

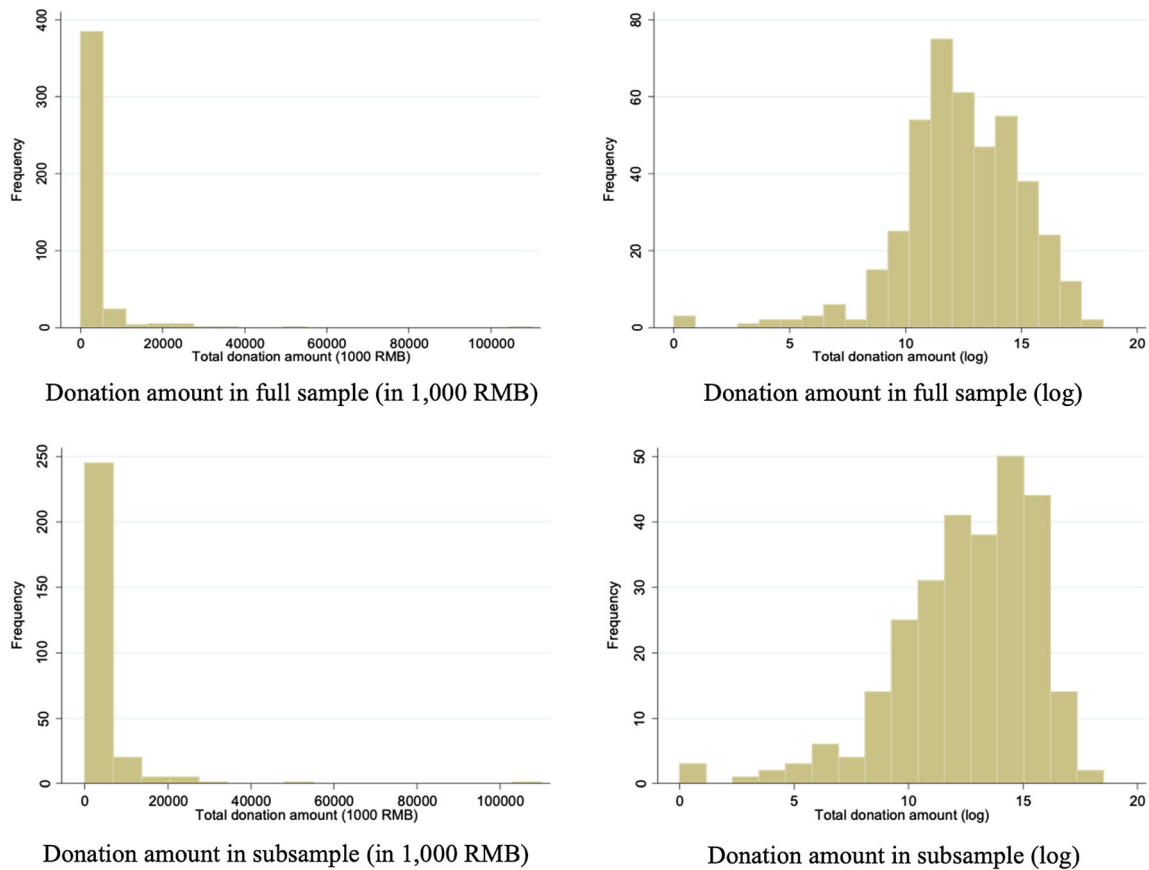


Fig. 2 Histograms of total donation amount before and after log-transformation (including outliers)

Table 2 Data description

	Original sample size	Outliers identified by box plot	Outliers identified by Q-Q plot	Sample size excluding outliers
Full sample	427	10	2	415
Subsample	278	6	3	269

that heteroscedasticity was not a major issue for our dataset.

Results

Descriptive Results

Table 3 presents the descriptive statistics of the full sample and subsample. In the full sample ($n=415$), the mean and median total donation amount raised by the sample organizations was 2,452,678 RMB (approximately US\$385,580 as of November 2021) and 244,932 RMB (US\$38,505), respectively, ranging from 647 to 110,008,849 RMB (US \$17.29 million). We also collected data on total number of

donors in each campaign. The average contribution per donor in PFO campaigns was US\$15, suggesting that authorized platforms are small donor platforms (Saxton & Wang, 2014). Donors in university-related campaigns tend to give relatively large donations, however, with a mean of US\$130.

Among the 415 projects, 266 (64.1%) projects were conducted on authorized platforms, followed by 149 (35.9%) on WeChat official accounts. The number of project updates ranged from 0 to 65, with a mean of 3.66. The subsample ($n=269$) includes PFO campaigns only. In the subsample, we observed that 85 fundraisers (31.6%) provided information on awards, and the mean predefined duration was nearly 48 days. Table 3 also shows project-level characteristics of the full sample.

Table 3 Descriptive statistics of the full sample and subsample

Variable	N	M (or %)	SD	Median	Min.	Max.
<i>Dependent variable</i>						
Total donation amount (RMB)	415	2,452,678	7,423,930	244,932	647	110,008,849
<i>Other crowdfunding information</i>						
Total number of donors	415	47,292	126,141	2265	15	1,486,008
<i>Independent variables</i>						
<i>Platform</i>						
Authorized platform	266	64.10%				
WeChat official account	149	35.90%				
Updates	415	3.66	7.22	1	0	65
<i>Award</i>						
No	184	68.40%				
Yes	85	31.60%				
Predefined duration (days)	269	47.59	49.14	32	1	206
<i>Control variables</i>						
<i>Starting month</i>						
January	225	54.22%				
February	169	40.72%				
March	21	5.06%				
<i>Supported area</i>						
Provinces other than Hubei	125	30.12%				
Including Hubei	251	60.48%				
Unspecified	39	9.40%				
<i>Fundraising goal (RMB)</i>						
<500,000 or unspecified	210	50.60%				
500,000–1,000,000	25	6.02%				
1,000,000–5,000,000	103	24.82%				
5,000,000–10,000,000	47	11.33%				
>10,000,000	30	7.23%				

Regression Results

Our first, and primary, research question explores critical factors that are related to the success of COVID-19 crowdfunding efforts, which is addressed by the results of six regression models in Table 4. We did not find support for H1. Rather, according to the results in Model 1, we would expect campaigns using WeChat official accounts to raise 68.2% more in total donations than those using authorized platforms (0.52, $p < 0.05$), holding all other variables constant. The coefficient on *Platform* in Model 3 also shows that the use of WeChat official accounts is significantly associated with higher levels of donations (0.42, $p < 0.1$). The results in Model 2 provide support for H3, showing a statistically significant positive relationship between a higher frequency of project updates and crowdfunding success. More precisely, a 10% increase in the number of updates is associated with an expected increase in donations of 4.48% (0.46, $p < 0.001$). Model 3

produces identical sign and significance of the coefficient on *Updates* (0.45, $p < 0.001$).

We find evidence in support of H2 and H4. The results in Model 4 demonstrate a positive and significant relationship between the provision of information on awards and crowdfunding success: PFOs that communicated information about their awards generated 80.4% more donations than those who did not (0.59, $p < 0.01$). The results of Model 5 show that a longer predefined campaign duration has a negative and significant relationship with crowdfunding success: a 10% increase in predefined duration is related to a predicted decrease in donations of 2.54% (-0.27, $p < 0.001$). We find similar results in Model 6, as indicated by the positive coefficient on *Award* (0.59, $p < 0.001$) and the negative coefficient on *Predefined duration* (-0.27, $p < 0.001$).

The results for control variables show that crowdfunding campaigns launched in January tend to receive more donations, suggesting the importance of a quicker response. In all models, the results show significant geographical

Table 4 Results of the multiple regressions on *Total donation amount*

Variable	Model 1 Full sample	Model 2 Full sample	Model 3 Full sample	Model 4 Subsample	Model 5 Subsample	Model 6 Subsample
<i>Independent variables</i>						
<i>Platform</i> (ref: authorized platform)						
WeChat official account	0.52*(0.22)		0.42*(0.21)			
Updates (log)		0.46***(0.08)	0.45***(0.08)			
<i>Award</i> (ref: no)						
Yes				0.59***(0.19)		0.59***(0.18)
Predefined duration (days) (log)					-0.27***(0.06)	-0.27***(0.06)
<i>Control variables</i>						
<i>Starting month</i> (ref: January)						
February	-1.04***(0.15)	-0.97***(0.15)	-0.94***(0.15)	-1.28***(0.21)	-1.13***(0.21)	-1.07***(0.2)
March	-2.86***(0.33)	-2.83***(0.31)	-2.7***(0.32)	-3.04***(0.34)	-2.73***(0.34)	-2.66***(0.34)
<i>Supported area</i> (ref: provinces other than Hubei)						
Including Hubei	0.73***(0.16)	0.9***(0.15)	0.79***(0.16)	1.03***(0.19)	0.84***(0.19)	0.91***(0.19)
Unspecified	0.01(0.26)	0.09(0.25)	0.04(0.25)	0.19(0.27)	0.2(0.26)	0.31(0.26)
<i>Fundraising goal</i> (RMB) (ref: <500,000/unspecified)						
500,000–1,000,000	0.58*(0.32)	0.27(0.28)	0.52*(0.31)	0.67*(0.33)	0.79*(0.32)	0.85***(0.31)
1,000,000–5,000,000	1.85***(0.22)	1.44***(0.16)	1.72***(0.22)	1.8***(0.24)	2***(0.24)	1.99***(0.23)
5,000,000–10,000,000	3.16***(0.28)	2.76***(0.23)	3.06***(0.27)	3.01***(0.3)	3.14***(0.3)	3.12***(0.29)
>10,000,000	4.55***(0.32)	3.89***(0.27)	4.21***(0.32)	4.11***(0.34)	4.41***(0.33)	4.31***(0.33)
Constant	11.44***(0.22)	11.18***(0.2)	10.96***(0.23)	11.23***(0.26)	12.08***(0.28)	11.84***(0.28)
R2	0.63	0.66	0.66	0.72	0.73	0.75
adjusted R2	0.63	0.65	0.65	0.71	0.73	0.74
Sample size	415	415	415	269	269	269

⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; standard errors in parentheses; dependent variable is the *Total donation amount* (log)

effects: projects supporting Hubei seem to be able to attract more donations. Notably, overall, campaigns with a higher fundraising target tend to generate more donations.

Robustness Check

For a robustness check, we first added group donations to total donation amount of 28 university-related campaigns conducted on WeChat official accounts. Using the natural log of the dependent variable and following the same outlier removal process, we obtained the same sample size as presented in Table 2. Using the same set of control variables, we reran core regression models in Table 4 (Models 1, 2, 4 and 5). The statistical significance of the coefficient on *Platform* unsurprisingly increases, and there

were no changes in sign or significance for other variables (see columns 1 and 2 in Table 5 for a comparison). Unreported regression diagnostics show similar results as well.

Second, we included outliers and reran the regressions, after log-transformation of the dependent variable. The results remain largely stable (column 3 in Table 5).

Finally, we used an alternative method to control for the geographical effect. Considering that Wuhan was also the center of attention, we adopted two *city* dummy variables (Wuhan-related, non-Wuhan-related) in place of three province dummy variables. The dependent variable was log-transformed, and the same outlier removal steps were followed. Our results remain stable, and the significance of the coefficient on *Platform* increases (column 4 in Table 5).

Table 5 Summary of results of robustness analysis

	1. Regression excluding outliers (log)		2. Regression adding group donations and excluding outliers (log)		3. Regression including outliers (log)		4. Regression using two <i>city</i> dummy variables as controls and excluding outliers (log)	
	Coefficients	<i>p</i> value	Coefficients	<i>p</i> value	Coefficients	<i>p</i> value	Coefficients	<i>p</i> value
<i>Platform</i> (ref: authorized platform)								
WeChat official account	0.52*	0.020	0.75***	0.000	0.85**	0.007	0.71**	0.002
<i>Updates</i> (log)	0.46***	0.000	0.47***	0.000	0.58***	0.000	0.44***	0.000
<i>Award</i> (ref: no)								
Yes	0.59**	0.002	0.61**	0.001	0.96**	0.001	0.51**	0.009
<i>Predefined duration</i> (days) (log)	-0.27***	0.000	-0.28***	0.000	-0.36***	0.000	-0.29***	0.000

Similarly, significantly more donations went to Wuhan-related campaigns.

Discussion

Mixed Effects of External Signals in a Democratized Charitable Fundraising Landscape

Consistent with findings in other crowdfunding settings (Mollick & Robb, 2016), the rise of charitable crowdfunding has democratized access to individual donations. Unlike traditional fundraising where established charities and professional fundraisers play a dominant role, charitable crowdfunding can be easily employed by “amateur” fundraisers as well. As a result, charitable crowdfunding can be formal or informal, depending on the fundraiser type and the platform chosen.

Despite the potential far-reaching implications, surprisingly little attention has been devoted to whether formal campaigns using external signals have a better chance of success than informal ones. Based on a theoretical framework that takes into account the democratized nature of charitable crowdfunding, our study provides preliminary evidence that external signals produced by government regulators may have mixed signaling effects. In the case of PFO campaigns, disclosing award information is found to be positively related to funding success. Yet university-related campaigns using WeChat official accounts tend to generate more donations than PFO campaigns using authorized platforms, and even more so when group donations were added.

One possible reason is that, as university-related campaigns were mainly targeted at alumni, donors’ membership of or individual attachment to the fundraiser was an

important contributing factor. This may also explain the higher average donation per donor. Still, our findings are in line with those of Mejia et al. (2019), reporting that although both updates and charitable status positively affect total donations in disaster-relief crowdfunding, the effect size of the former is surprisingly greater than that of the latter.

In the e-commerce context, Mavlanova et al. (2016) found that external signals were perceived as more effective by buyers than internal signals. However, in an online giving environment where both formal and informal campaigns can compete for donations, the role of external signals seems to be less certain. Given that democratized access to funds has become a common phenomenon in charitable crowdfunding, our findings not only contribute to theory building in this field more generally, but also raise important questions that merit further investigation.

Specifically, these findings lead to the question of whether those external signals that have often been employed by charities in traditional fundraising (Handy, 2000) may play a less important role in charitable crowdfunding. The giving behavior of crowdfunding donors could be different from that of traditional donors (Osili et al., 2021). We therefore call for further research into the way external signals are perceived by crowdfunding donors and its underlying mechanisms.

Notable Role of Internal Signals in Donation-Based Charitable Crowdfunding

Our second research question concerns whether crowdfunding success in pure donation-based context is related to the same factors as other crowdfunding models. Importantly, our findings suggest that the effects of internal signals, which have largely been confirmed by research in

the reward-based context, may also hold true in donation-based charitable crowdfunding. The underlying reasons are probably that supporters in different types of crowdfunding essentially all expect successful outcomes from their financial contributions (Mollick, 2014) and that donation- and reward-based models share the common characteristic of the absence of monetary rewards (Alegre & Moleskis, 2021).

Our results are also consistent with previous findings in the donation-based setting. First, the findings of Mejia et al. (2019) on project updates in the disaster-relief context are supported by our study. The current findings further indicate that, regardless of the type of platform used, a higher frequency of updates may serve as an effective internal signal. Moreover, focusing on charitable crowdfunding campaigns hosted on an authorized platform in China, prior research suggests a positive correlation between shorter campaign durations and higher percentages of goal achievement (Ba et al., 2020). As shown by our results, the correlation remains significant when total donation amount is used as the success measure.

Taken together, our findings further confirm that, crowdfunding donors seem to place a high value on quality signals of the campaign itself, whether it is conducted formally or informally. Unlike website policies provided by online sellers in e-commerce, project-level indicators with a higher level of certainty may be particularly effective in charitable crowdfunding. Overall, the role of internal signals in the donation-based context has been less explored, and further research is still needed.

Implications for Practice and Policy

Recommendations for Fundraisers

Charitable crowdfunding is a rapidly growing field with tremendous potential. Our study not only answers the call for exploring how nonprofits can better exploit this fundraising tool in crisis situations (Santos & Laureano, 2021), but also sheds light more generally on the fundraising strategies that can be adopted in charitable crowdfunding.

The results of this study suggest that established charities can use award information to effectively signal higher quality. Nevertheless, to outperform their “amateur” competitors, formal charities may need to pay particular attention to the likely influence of internal signals. Our findings point to the importance of providing more frequent project updates and of setting an appropriate campaign duration.

Additionally, we find that a higher fundraising target is generally related to a significantly higher total donation amount. This is contrary to previous findings in the reward-based context (Davies & Giovannetti, 2018; Frydrych et al., 2014; Mollick, 2014) where funding success is measured by goal achievement. A possible reason is that the crowdfunding site (Kickstarter) investigated in above studies employs an all-or-nothing model. In charitable crowdfunding with a keep-it-all mechanism, Bukhari et al. (2019) reported a significant and positive relationship between higher funding goals and total donation amount. Although more research is still needed, we do not recommend keeping the goal as low as possible in charitable crowdfunding. Instead, fundraisers may set reasonable goals that reflect the campaign needs.

Recommendations for Policymakers

Prior research noted the need for regulators to respond to changes that technology has brought to charitable fundraising (Breen, 2016), as well as the regulatory challenges posed by charitable crowdfunding (Mayer, 2022). As exemplified by COVID-19 crowdfunding campaigns in China, in the digital era, both formal charities and “amateur” fundraisers can employ crowdfunding techniques to raise funds from the public.

While informal charitable crowdfunding may fall into the category of unlawful fundraising under China’s current regulatory framework, no further steps have been taken so far to crack down on it. The dilemma facing the charity regulator is how to prevent potential fraud and misconduct without hindering the development of new forms of fundraising. Our findings suggest that informal charitable crowdfunding may have the advantage of quickly reaching a crowd beyond the regular donor base of formal charities. One important implication is that a more flexible regulatory approach is needed to address the issue of informal campaigns, which may take the form of best practice guidelines for fundraisers and guidance for the public.

Conclusion and Future Research

COVID-19 crowdfunding campaigns in China offer a great opportunity to investigate how donations were pooled together by both formal and informal charitable crowdfunding toward a common goal. Drawing on a unique dataset of crowdfunding campaigns launched across different platforms (authorized and unauthorized), our study provides preliminary, albeit important, evidence on the role

of external and internal signals in pure donation-based charitable crowdfunding.

Our study also answers the call for more research into new forms of philanthropy in China (Bies & Kennedy, 2019) and sheds important light on how democratized access to individual donations has been made possible by charitable crowdfunding. Government-affiliated charities no longer play a dominant role as they once did. Even more noteworthy is the rise of informal charitable crowdfunding. We believe that our findings lay the foundation for a more thorough understanding of charitable giving in China.

We acknowledge several limitations to our study. First, this study focuses on donation-based charitable crowdfunding for emergency relief during the pandemic in China, which might limit the generalizability of the results. However, despite the possible changes in giving patterns under emergency circumstances, a recent empirical study found that individual crowdfunding donations during the COVID-19 pandemic in the Netherlands did not differ significantly from that before the crisis, as indicated by the number of donors and the average donation amount (Van Teunenbroek & Hasanefendic, 2022). More importantly, both our dataset and theoretical framework reflect the increasingly democratized nature of charitable crowdfunding. As a result, our findings offer promising directions for future research in the broader charitable crowdfunding context.

Second, the focus of this study is on factors at the project and fundraiser levels, whereas donor-side factors were not included. Our findings point to the potential relationship between alumni's individual attachment to the fundraiser and crowdfunding success. Alumni giving has become a fast-growing form of philanthropy in China. Given the important roles played by university-related campaigns in the pandemic, further research is necessary to advance our understanding of alumni giving behavior in China.

Last but not least, any research may be limited by the data structure. We acknowledge this problem too given that the structure of our dataset is cross-sectional, which is evidently limited in addressing endogeneity problems in our analysis. Yet our study has yielded valid findings, which have rarely been documented in existing literature. Future research may build on and expand this study by employing more refined research design, including experimental design that can further investigate the causal relationship between the use of external and internal signals and crowdfunding success.

Author Contributions Xiao Pan designed the research, collected the data and wrote the paper; Lin Dong analyzed the data and presented the results of regression analyses.

Funding This work was financially supported by the Innovative Team Project “Research on Internet and Big Data Rule of Law” of Shanghai University of Finance and Economics (Grant Number 2018110696) and the 2022 Fundamental Research Funds for the Central Universities of Shanghai University of Finance and Economics.

Declarations

Conflict of interest The authors have no competing interests to declare that are relevant to the content of this article.

Appendix A

See Table 6.

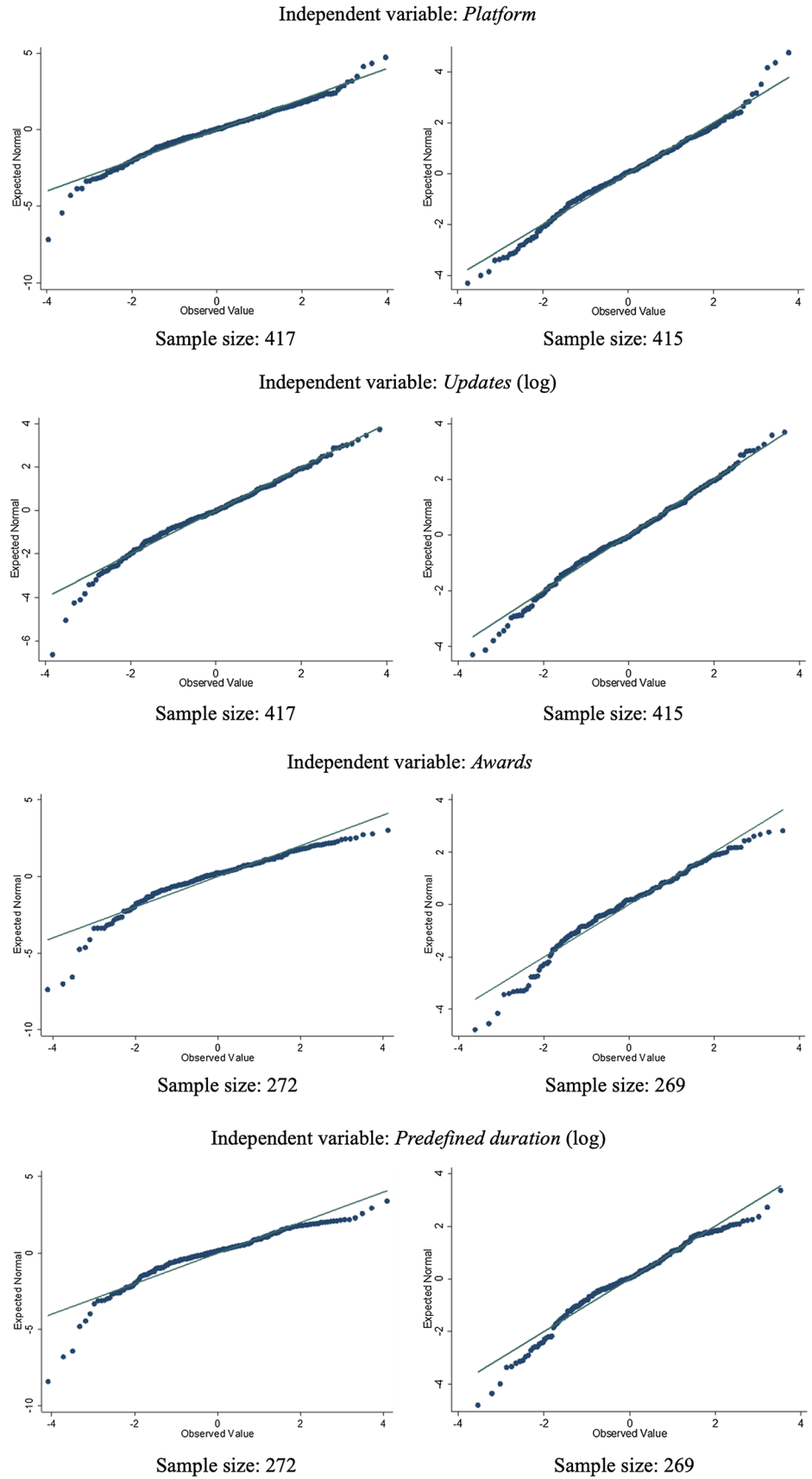
Table 6 Overview of 427 crowdfunding campaigns and platforms (as of April 2021)

Platform	Platform names and websites	Access to project information	Projects numbers
Platforms authorized by MCA in 2016	Tencent GongYi (gongyi.qq.com)	Website/mobile app	89
	Alipay GongYi (love.alipay.com)	Website/mobile app	47
	Lianquan Wang (www.lianquan.org)	Website/mobile app	30
	Qingsong GongYi (qsgy.qschou.com)	Mobile app	28
	Sina Weibo GongYi (gongyi.weibo.com)	Website/mobile app	28
	Baidu GongYi (gongyi.baidu.com)	Mobile app	14
Platforms authorized by MCA in 2018	Guangyi United for Charity (www.gyufc.org)	Website/mobile app	12
	Zhongyin GongYi (shanyuanfoundation.com)	Mobile app	11
	Shuidi GongYi (shuidigongyi.com)	Website/mobile app	9
	Bangbang GongYi (bangbangwang.cn)	Website/mobile app	4
	Suning GongYi (gongyi.suning.com)	Website/mobile app	3
WeChat official account	Meituan GongYi (gongyi.meituan.com)	Website/mobile app	3
	Fundraisers' official accounts	Mobile app	149

Appendix B

See Fig. 3.

Fig. 3 Q–Q plots of total donation amount (log) for each independent variable before and after removing additional outliers



References

- Aguinis, H., Gottfredson, R. K., & Joo, H. (2013). Best-practice recommendations for defining, identifying, and handling outliers. *Organizational Research Methods*, 16(2), 270–301.
- Ahlers, G. K. C., Cumming, D., Günther, C., & Schweizer, D. (2015). Signaling in equity crowdfunding. *Entrepreneurship Theory and Practice*, 39(4), 955–980.
- Alegre, I., & Moleskis, M. (2021). Beyond financial motivations in crowdfunding: A systematic literature review of donations and rewards. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 32(2), 276–287.
- Ba, Z., Zhao, Y., Zhou, L., & Song, S. (2020). Exploring the donation allocation of online charitable crowdfunding based on topical and spatial analysis: Evidence from the Tencent GongYi. *Information Processing & Management*, 57(6).
- Behl, A., & Dutta, P. (2020). Engaging donors on crowdfunding platform in disaster relief operations (dro) using gamification: A civic voluntary model (cvm) approach. *International Journal of Information Management*, 54, 102140.
- Beier, M., & Wagner, K. (2015). *Crowdfunding success: A perspective from social media and e-commerce*. In *Paper presented at the 36 international conference on information systems*.
- Best, J., et al. (2013). *Crowdfunding's potential for the developing world*. Retrieved from <https://openknowledge.worldbank.org/handle/10986/17626>
- Bhati, A., & McDonnell, D. (2020). Success in an online giving day: The role of social media in fundraising. *Nonprofit and Voluntary Sector Quarterly*, 49(1), 74–92.
- Bies, A., & Kennedy, S. (2019). The state and the state of the art on philanthropy in China. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 30(4), 619–633.
- Borst, I., Moser, C., & Ferguson, J. (2018). From friendfunding to crowdfunding: Relevance of relationships, social media, and platform activities to crowdfunding performance. *New Media & Society*, 20(4), 1396–1414.
- Breen, O. B. (2016). Minding the pennies: Global trends in the regulation of charitable fundraising. In J. Harrow, S. D. Phillips, & T. Jung (Eds.), *The routledge companion to philanthropy* (pp. 229–243). Routledge.
- Bukhari, F. A. S., Usman, S. M., Usman, M., & Hussain, K. (2019). The effects of creator credibility and backer endorsement in donation crowdfunding campaigns success. *Baltic Journal of Management*, 15(2), 215–235.
- Chen, Y., Zhou, S., Jin, W., & Chen, S. (2022). Investigating the determinants of medical crowdfunding performance: A signaling theory perspective. *Internet Research*.
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management*, 37(1), 39–67.
- Courtney, C., Dutta, S., & Li, Y. (2017). Resolving information asymmetry: Signaling, endorsement, and crowdfunding success. *Entrepreneurship Theory and Practice*, 41(2), 265–290.
- Cumming, D. J., Leboeuf, G., & Schwienbacher, A. (2020). Crowdfunding models: Keep-it-all vs. all-or-nothing. *Financial Management*, 49(2), 331–360.
- Davies, W. E., & Giovannetti, E. (2018). Signalling experience & reciprocity to temper asymmetric information in crowdfunding evidence from 10,000 projects. *Technological Forecasting and Social Change*, 133, 118–131.
- Elmer, G., Ward-Kimola, S., & Burton, A. G. (2020). Crowdfunding during COVID-19: An international comparison of online fundraising. *First Monday*.
- FIDC. (2020). *Combating COVID-19: Statistical analysis of data on online fundraising platforms during the second phase (in Chinese)*. Retrieved from <https://www.cafpnet.cn/index.php?s=/Index/detail/id/404.html>
- FIDC. (2021). *Tracking and analysis of online fundraising data for the Henan floods in 2021 (in Chinese)*. Retrieved from <https://www.cafpnet.cn/index.php?s=/Index/detail/id/617.html>
- Frydrych, D., Bock, A. J., Kinder, T., & Koeck, B. (2014). Exploring entrepreneurial legitimacy in reward-based crowdfunding. *Venture Capital*, 16(3), 247–269.
- Gordon, T. P., Knock, C. L., & Neely, D. G. (2009). The role of rating agencies in the market for charitable contributions: An empirical test. *Journal of Accounting and Public Policy*, 28(6), 469–484.
- Handy, F. (2000). How we beg: The analysis of direct mail appeals. *Nonprofit and Voluntary Sector Quarterly*, 29(3), 439–454.
- Ho, H. C., et al. (2021). The influence of signals on donation crowdfunding campaign success during COVID-19 crisis. *International Journal of Environmental Research and Public Health*, 18(14), 7715.
- Hoos, F. (2021). Showing off or showing impact? The joint signalling effect of reputation and accountability on social entrepreneurs' crowdfunding success. *Management Accounting Research*.
- Huang, S., Pickernell, D., Battisti, M., & Nguyen, T. (2021). Signalling entrepreneurs' credibility and project quality for crowdfunding success: Cases from the kickstarter and indiegogo environments. *Small Business Economics*.
- Igra, M., Kenworthy, N., Luchsinger, C., & Jung, J.-K. (2021). Crowdfunding as a response to COVID-19: Increasing inequities at a time of crisis. *Social Science & Medicine*, 282, 114105.
- Kirmani, A., & Rao, A. R. (2000). No pain, no gain: A critical review of the literature on signaling unobservable product quality. *Journal of Marketing*, 64(2), 66–79.
- Kleinert, S., Volkmann, C., & Grünhagen, M. (2020). Third-party signals in equity crowdfunding: The role of prior financing. *Small Business Economics*, 54(1), 341–365.
- Kunz, M. M., Bretschneider, U., Erler, M., & Leimeister, J. M. (2017). An empirical investigation of signaling in reward-based crowdfunding. *Electronic Commerce Research*, 17(3), 425–461.
- Liu, Y., Chen, Y., & Fan, Z.-P. (2021). Do social network crowds help fundraising campaigns? Effects of social influence on crowdfunding performance. *Journal of Business Research*, 122, 97–108.
- Mavlanova, T., Benbunan-Fich, R., & Lang, G. (2016). The role of external and internal signals in e-commerce. *Decision Support Systems*, 87, 59–68.
- Mayer, L. H. (2022). Regulating charitable crowdfunding. *Indiana Law Journal*, 97(4), 1375–1438.
- MCA. (2018). *Announcement on issuing the list of internet public fundraising information platforms for charitable organizations (in Chinese)*.
- Mejia, J., Urrea, G., & Pedraza-Martinez, A. J. (2019). Operational transparency on crowdfunding platforms: Effect on donations for emergency response. *Production and Operations Management*, 28(7), 1773–1791.
- Moine, A., & Papiasse, D. (2020). Evidence from France: How crowdfunding is being used to support the response to COVID-19. *LSE European Politics and Policy (EUROPP) blog*.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, 29(1), 1–16.
- Mollick, E., & Robb, A. (2016). Democratizing innovation and capital access: The role of crowdfunding. *California Management Review*, 58(2), 72–87.
- Oosterhof, L., Heuvelman, A., & Peters, O. (2009). Donation to disaster relief campaigns: Underlying social cognitive factors exposed. *Evaluation and Program Planning*, 32(2), 148–157.

- Osili, U., et al. (2021). *Charitable crowdfunding: Who gives, to what, and why?* Retrieved from <https://hdl.handle.net/1805/25515>
- Paschen, J. (2017). Choose wisely: Crowdfunding through the stages of the startup life cycle. *Business Horizons*, 60(2), 179–188.
- Riccardi, M. T. (2016). The power of crowdsourcing in disaster response operations. *International Journal of Disaster Risk Reduction*, 20, 123–128.
- Salido-Andres, N., Rey-Garcia, M., Alvarez-Gonzalez, L. I., & Vazquez-Casielles, R. (2021). Mapping the field of donation-based crowdfunding for charitable causes: Systematic review and conceptual framework. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 32(2), 288–302.
- Santos, M. R. C., & Laureano, R. M. S. (2021). COVID-19-related studies of nonprofit management: A critical review and research agenda. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*.
- Saxton, G. D., & Wang, L. (2014). The social network effect: The determinants of giving through social media. *Nonprofit and Voluntary Sector Quarterly*, 43(5), 850–868.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3).
- Spence, M. (2002). Signaling in retrospect and the informational structure of markets. *The American Economic Review*, 92(3), 434–459.
- Tsai, K. S., & Wang, Q. (2019). Charitable crowdfunding in China: An emergent channel for setting policy agendas? *The China Quarterly*, 240, 936–966.
- UWW, & Bain. (2019). *Digital philanthropy in China: Activating the individual donor base*. Retrieved from https://s3.amazonaws.com/uww.assets/site/partners/UWW_Bain_report_digital_philanthropy_in_China_2019.pdf
- Van Teunenbroek, C. (2019). Philanthropic crowdfunding as a growing industry?: Crowdfunding characteristics and recent developments worldwide. *Alliance Magazine*.
- Van Teunenbroek, C., & Hasanefendic, S. (2022). Researching the crowd: Implications on philanthropic crowdfunding and donor characteristics during a pandemic. *Journal of Philanthropy and Marketing*.
- Wells, J. D., Valacich, J. S., & Hess, T. J. (2011). What signal are you sending? How website quality influences perceptions of product quality and purchase intentions. *MIS Quarterly*, 35(2), 373–396.
- Zhang, Y., Tan, C. D., Sun, J., & Yang, Z. (2020). Why do people patronize donation-based crowdfunding platforms? An activity perspective of critical success factors. *Computers in Human Behavior*, 112, 106470.
- Zhou, H., & Ye, S. (2019). Legitimacy, worthiness, and social network: An empirical study of the key factors influencing crowdfunding outcomes for nonprofit projects. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 30(4), 849–864.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.