



From friendfunding to crowdfunding: Relevance of relationships, social media, and platform activities to crowdfunding performance

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Abstract

Crowdfunding involves raising small amounts of money from a large number of people, typically via the Internet and social networks, to fund a project. Crowdfunding projects are mainly funded by the project creator's relatively small network of family and friends. We argue that mobilizing funders outside this close network positively contributes to the success of a crowdfunding success. To study how project creators seek to attract funding from more distant/potential resources (latent ties) in addition to existing networks (strong and weak ties), we examined usage of social media (Facebook and Twitter) and the crowdfunding platform (website). We analyzed 10 cultural projects hosted on the Dutch crowdfunding platform "VoordeKunst." Our results contribute to theorizing on latent tie activation by demonstrating that social media messages and platform updates add economic value to the crowdfunding effort. Our study also explains the moderating effect of these messages on funders of various tie strengths.

Keywords

Bystander effect, crowdfunding, friendfunding, herding behavior, latent ties, performance, social media, social networks, tie strength

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Introduction

Online activity is drawing increasing attention as an important source of value creation (Bechmann and Lomborg, 2013). One particular online activity that may create value is crowdfunding, where groups or individuals seek sources of funding among non-traditional investors (Belleflamme et al., 2013). Crowdfunding is a new practice that has gained popularity in the past decade. It is defined as “an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes” (Schwienbacher and Larralde, 2012: 4). An emerging stream of research confirms that crowdfunding can be a new source of value creation (Aitamurto, 2011; Burtch et al., 2014; Davidson and Poor, 2014; Hills, 2015; Lehner, 2013). In this study, we analyze value creation in and beyond a project creators’ social network and examine effects of social media usage (Facebook and Twitter) and the online crowdfunding platform.

Successful crowdfunding projects create economic value by providing access to monetary resources (Lehner, 2013), as well as other types of values distinguished by Bourdieu (1986) such as social and cultural value (Gerber and Hui, 2013). Social value in crowdfunding consists of, for example, the formation of an ad hoc community or the extension of an existing community around a given project (Hui et al., 2014). Cultural value consists of goods, services, or experiences that would not be realized without funding by the crowd. For instance, Mollick and Nanda (2015) showed that crowdfunding increased the production of cultural projects and that the crowd—in contrast to professional evaluation teams—is more generous in granting funding to cultural projects. In addition, crowdfunding leads to a democratization of the cultural sector (Brabham, 2017; Scott, 2015), in that the selection of cultural projects is no longer limited to the expert’s judgment. Rather, any individual, independent of knowledge, income, or social class, can participate and contribute to a project of his or her choice. Nonetheless, for most projects, the realization of social and cultural value hinges on access to value created by monetary resources. Therefore, in this article, we measure project success in terms of monetary value. Specifically, we focus on how project creators can leverage funders in and beyond their immediate personal networks as a way of enhancing the success of their crowdfunding projects.

Some understanding of crowdsourcing practices for economic value may be gained from crowdsourcing research of voluntary engagement. This body of research shows two patterns of voluntary engagement based on the background of participants (Budhathoki and Haythornthwaite, 2013; Haythornthwaite, 2009). One pattern shows participants who are close to the project creator and provide support for reasons of status enhancement and reciprocity; the second pattern features participants unknown to the project creator, who are motivated by the project goal to provide support.

Adding to this perspective, crowdfunding research concludes that the background of funders matters. First, “friendfunding” comprises funding by family members, friends, and close acquaintances. For example, English (2013) emphasizes that the major funders in a crowdfunding project on education were members of the project creator’s family. Second, funding is often derived from people at a greater distance (Agrawal et al., 2015). For example, Mollick (2014) acknowledges that friendfunding networks cannot provide

all the required capital and suggests that project creators will benefit when their call for funding also reaches people beyond their existing social network of family and friends. Reaching unknown, distant funders becomes more urgent for crowdfunding projects with higher target amounts or when the project creator wants to start another crowdfunding project and does not want to approach previous backers (Davidson and Poor, 2016). However, while Agrawal et al. (2015) found that the strength of a relationship affects the timing of the funding, we shift the focus by investigating the effects of tie strength on the project performance.

To reach large numbers of potential funders, project creators commonly aim to build online crowdfunding communities on social media (Gerber et al., 2014) using Facebook, Twitter, and crowdfunding platforms. The various activities may include project updates and messages. However, social media have a rather ambiguous role in the community-building process (Lehner, 2013). On one hand, social media are presented as a requirement for the crowdfunding process in general (Gerber et al., 2014). For instance, Gerber and Hui (2013) point out the advantages of social media, showing that project creators use YouTube and Facebook to publish and disseminate their funding requests successfully among potential investors. Social media have also been shown to stimulate “herding,” where new donors are likely to copy the behavior of prior donors through peer influence, an important driver of crowdfunding success (Agrawal et al., 2015; Zhang and Liu, 2012). On the other hand, social media also amplify the “bystander” effect (Agrawal et al., 2013; Mollick, 2014). Here, potential funders withhold funding because they assume that others—who, as they know through social media, have also received a funding request—will provide funding, resulting in poor project performance.

Summarizing, it is unclear how project creators can optimally use social media to mobilize potential funders in and beyond their friendfunding networks, to increase their project’s performance. This article addresses the following research question:

How do crowdfunding project creators use social media to activate known and unknown funders in an effort to create economic value?

To answer this question, we draw on social network theory and develop a conceptual model that explains economic value creation in crowdfunding, expressed as project performance. We then investigate how project creators tap into existing and as yet unexploited social networks through online activities on social media and crowdfunding platforms. We show that the funding behavior of funders, with whom the project creator has a close, distant, or no relation, is shaped by the project creator’s use of social media and platform information.

Literature review

Crowdfunding projects typically require large numbers of funders to reach funding targets because individual funders typically donate small amounts (Belleflamme et al., 2013). Although substantial numbers of funders are essential for all types of crowdfunding, additional funders beyond one’s friendfunding network are particularly relevant for donation- and reward-based crowdfunding projects. These projects normally have low

target amounts (two-thirds of the projects below US\$5000¹). Increasing the number of funders and therewith exceeding low target amounts will turn donation- and reward-based crowdfunding into more serious financing instruments.

To connect with a large audience (the “crowd”), efficient communication, networking, and interaction—often online—with potential funders are considered crucial elements of a crowdfunding project (Schwienbacher and Larralde, 2012). Social network sites such as Twitter and Facebook are important for project creators to connect with fans and friends who are willing to provide financial support (Hui et al., 2014; Zheng et al., 2014). In addition, project creators are encouraged to inform potential funders about their project through updates on the crowdfunding platform (Mollick, 2014). In the following, we discuss these online activities that are typically used in crowdfunding as well as the role that different social ties may play in these campaigns.

Project updates (on-platform activities)

Crowdfunding projects are typically published on a website dedicated to hosting and promoting such projects. On this crowdfunding platform, each project has its own page presenting information about the content, target amount, and project team. Most platforms facilitate project updates to reach the community of current and potentially new funders. Project updates represent online activities that are typically carried out on these crowdfunding platforms. Prior studies confirm that a higher frequency of project updates is associated with successful crowdfunding projects (Beier and Wagner, 2015; Mollick, 2014). At this point, it is unclear why frequent project updates increase project performance. A possible explanation is that high communication frequency eventually leads to stronger relations between people offline (Granovetter, 1973; Marsden and Campbell, 1984) and online (Ellison et al., 2007; Jones et al., 2013) which in turn leads to higher chances on financial support. Thus, we hypothesize that providing online updates on the project status will encourage community members to provide funding:

H1: The number of project updates relates positively to crowdfunding projects' performance.

Social media usage (off-platform activities)

While more traditional forms of private fundraising generally involve a modest number of investors, crowdfunding projects gather funding from large numbers of people (Belleflamme et al., 2013; Lu et al., 2014). To reach these large numbers and attract sufficient support, project creators often broadcast their project on various social media channels. Crowdfunding platforms typically provide sharing links to social media, especially Facebook and Twitter. The basic assumption is that social media help project creators to establish new contacts (Beier and Wagner, 2015), who in turn might become funders and contribute to enhanced project performance. Indeed, prior research has established that Twitter usage contributes to crowdfunding success (Lu et al., 2014). However, the Lu et al. study included Twitter usage by persons other than project creators, which makes it hard to determine the precise effect of social media efforts initiated

by the project creators themselves. Similarly, Beier and Wagner (2015) investigated the presence of links from crowdfunding projects to Twitter and Facebook, but did not assess whether the project creator actively used these social networks. Therefore, our study focuses on the project creators' use of social media, isolating the effect of social media efforts fully controlled by project creators. We argue that a higher intensity of social media usage will stimulate future donations and, thus, positively affect project performance:

H2. The number of social media messages posted by the project creator relates positively to the performance of crowdfunding projects.

The interplay of social media messages and social ties

Prior research has established that the size of the project creators' online social networks, such as the number of Facebook friends, positively correlates with the success of crowdfunding projects (Mollick, 2014; Zheng et al., 2014). However, not all project funders are necessarily friends or existing relations. For instance, Hui and colleagues found that project creators were sometimes disappointed that many friends did not provide support, but at the same time were surprised by the number of previously unknown funders (Hui et al., 2014). Also, Davidson and Poor (2014) found that the perceived proportion of known funders negatively predicts project success. However, it is still unclear how social relationships between funders and creators influence project success and how social media activities vary in their effect on mobilizing funders with whom the creator has different relationships.

To understand better the different relationships between project creators and funders, we draw on network theory, which focuses on relationships among people rather than on their personal attributes (Borgatti et al., 2014). Prior crowdfunding studies confirm that the type of relationship between a project creator and funder affects the decision to contribute to a crowdfunding project (Agrawal et al., 2015; Davidson and Poor, 2014). The network literature distinguishes a variety of relationships (Borgatti et al., 2014), including kinship relations (e.g. family members) and perceptual relations (e.g. being known or unknown to each other). Previous crowdfunding scholars have either analyzed family and friendship relations (Agrawal et al., 2015) or focused on perceptual relations (Davidson and Poor, 2014). Instead, our study analyzes the combination of kinship and perceptual relations. We distinguish between known persons who have closer (strong) ties or less close (weak) ties and unknown persons who have the potential to forge a relationship (latent ties).

Haythornthwaite (2005) studied the characteristics of media activities associated with different tie strengths. She showed that weak ties result from limited means of communication, while strong ties are created by a variety of communication means. In addition, people connected through weak ties communicate mainly via group-wide media, whereas strongly tied persons combine group-wide media with person-to-person communication in private meetings or personal emails (Haythornthwaite, 2005). The reason for the difference is that weakly tied people are less likely to communicate and their interaction is more passive, for example, simply "liking" a Facebook post. By contrast, people with strong

ties have a greater need to communicate with one another using a variety of expressions and are, therefore, more likely to proactively seek out other means of communication.

Given that strong ties use multiple and more private means of communication, crowdfunding campaigns on social media may not be very effective at reaching this type of relation. After all, it is likely that strongly tied people have already received news of the crowdfunding project via other means. Therefore, we expect that online activities for crowdfunding campaigns would be more effective in reaching weakly tied people who mainly use group-wide communication. Indeed, it is unlikely that weak ties would have received the funding request via other channels.

Aside from the benefit of reaching weak ties, we argue that social media also helps reaching latent ties, that is, people as yet unknown to the project creator. Through retweeting or commenting on Twitter, or by liking and commenting on Facebook, messages can appear on the timelines of as yet unconnected others. In addition, unconnected people can also gain access to Twitter messages and public Facebook pages when they use regular Internet search engines. Since latent ties are defined as unknown persons who can be reached via digital communication means, we expect that social media will particularly mobilize latent ties to become funders in a crowdfunding project:

H3. The number of social media messages posted by the project creator moderates the influence of tie strength on project performance such that weak and latent ties will provide more funding when more social media messages are posted.

Setting

We tested our hypotheses based on a sample of crowdfunding projects launched on “Voordekunst” (For the arts), a large reward-based crowdfunding platform in the Netherlands that targets the cultural sector. Both professional and amateur artists can start a crowdfunding project on Voordekunst. Individuals and companies willing to support projects can provide part of the desired financing. The average target amount of Voordekunst projects is about €5000 (around US\$7000), which is representative for reward-based crowdfunding projects.² Project creators promote their efforts by posting updates on the crowdfunding platform and social media such as Twitter and Facebook.

We had full access to the Voordekunst project data. Our study sample spans a 6-month period (January–June 2013), during which the platform hosted 271 completed projects,³ of which 204 projects were successful in terms of meeting their funding target (achieving 100% or more of the target), whereas 67 projects were not successful (achieving less than 100% of the target). We selected 10 cases for in-depth investigation, striving for maximum variation in project size and the number of funders. We selected five successful projects that achieved 100% or more of their funding goal and five unsuccessful projects that earned less than 100%. Table 1 provides the key statistics of the selected projects.

Methods

We collected data from three sources: archival data from the Voordekunst database, interviews with the 10 project creators, and Facebook and Twitter messages posted on these 10 projects.

Table 1. Key characteristics of the selected cases.

	Funding object	Target amount (€)	Success rate	Number of backers	Average amount per transaction (€)
Project1	Visual art	8000	5%	11	40
Project2	Theater	4700	15%	22	32
Project3	Movie	12,000	81%	47	150
Project4	Theater	10,000	70%	27	298
Project5	Theater	6000	22%	25	54
Project6	Visual art	8000	108%	57	151
Project7	Theater	2825	104%	63	46
Project8	Music	2400	102%	29	84
Project9	Installation	14,750	125%	206	89
Project10	Music	5500	100%	142	39

Measures

All variables were measured per project per day. Project days without any donations or social media activity were added to the data set as records with zero counts.

Project performance. We defined the dependent variable *project performance* as the daily amount (in euros) donated per project, consistent with prior work (Zhang and Liu, 2012). Data on project performance were derived from the Voordekunst database.

Tie strength. To measure the independent variable *tie strength* we used Haythornthwaite's (2002, 2005) relationship typology. Haythornthwaite follows the classic distinction between strong and weak ties (e.g. Granovetter, 1973; Uehara, 1994) and considers strong ties as family, friends, and direct colleagues. By contrast, she categorizes weak ties as those people who we know a little bit (Haythornthwaite, 2005): acquaintances and casual contacts. Additionally, Haythornthwaite (2002) introduces a third tie strength: latent, defined as a technically available connection that is not yet activated. Latent ties can be formed by computer-enabled or non-computer means, for example, by sending an email message to a department of an organization or by posting a public invitation to an event on Facebook. Latent ties can be converted to weak ties when social interaction occurs, for example, when people meet face-to-face, talk on the phone, or exchange email messages.

During the interviews, we asked the project creators to briefly describe their relation with each individual project funder at the time of donation to determine the tie strength. Next, interviewer and interviewee jointly classified each relation as strong, weak, or latent during this process. Funders who were unknown to the creator at the time of the donation were all classified as latent ties, even when social interaction started after the donation was received (e.g. added as a friend on Facebook). If other people co-organized the crowdfunding campaign, we also involved them in the classification of relationships. However, the analysis included only the highest tie strength reported per funder. This means that whenever a funder was a family member of a co-organizer but unknown to the project creator, the strength of this relationship was still classified as a strong tie.

Our archival data included the day and time of the donation, so we were able to determine the number of funders per tie strength per day and project. We excluded self-donations by project creators or other campaign members.

Social media activities. These activities are operationalized in various ways in the hypotheses: frequency of project updates on the crowdfunding platform (website), number of Facebook messages, and number of tweets (messages) on Twitter. We counted the updates, messages, and tweets that project creators posted per day throughout the entire campaign, ignoring updates or messages posted outside the funding period, as well as messages not referring to the crowdfunding project. To capture the effect of project updates and social media updates, we measured these activities on the day prior to the day of the donation measure. This resulted in three continuous variables: lagged number of project updates, lagged number of Facebook posts, and lagged number of tweets.

Lagged project performance (control variable). Prior research shows that success on the preceding day positively affects later performance of the project (e.g. Colombo et al., 2015). To control for this, we added this variable, but in contrast to the variable “project performance,” this measure included self-donations since the totals published on the Voordekunst website also included the project creator’s own donations.

Results

Table 2 lists the means, standard deviations, and correlations.

We analyzed the differences between successful and failed projects (i.e. reaching/exceeding the target amount or not) with regard to strong, weak, and latent tie funders. Possibly, project creators who manage to attract bigger proportions of unknown funders are best at creating economic value, whereas project creators who rely on their family and friends network create less economic value. As summarized in Table 3, we found that successful projects had significantly ($t(58)=-2.77, p<.01, r=.34$) higher proportions of latent tie funders ($M=36\%$, standard error $[SE]=2.8\%$) compared to failed projects ($M=18\%$, $SE=5.8\%$). This difference is significant. Although successful projects show lower proportions of donations from strong tie and weak tie funders, these differences are not significant. This suggests that successful projects appear to attract higher proportions of latent tie funders without (significantly) losing strong and weak tie funders.

Because *project performance* and *lagged project performance* data are not distributed normally, we used the logarithmic values in the regression analysis (Field, 2005). Next, we excluded two outliers in the number of tweets (out of 604 values) to overcome multicollinearity. Once the two outliers were excluded, the maximum variance inflation factors (VIFs) obtained in any of the models were substantially below the cutoff value of 10 for regression models (Field, 2005). Table 4 shows the results of the linear regression analyses.

Table 4 (Model 5) shows that the control variable *lagged project performance* has a significant and positive relation with project performance ($\beta=.18, p<.001$). The model also shows that strong ties provide more funding ($\beta=.91, p<.001$) compared to weak ties ($\beta=.72, p<.001$) which in turn provide more funding than latent ties ($\beta=.56, p<.001$).

Table 2. Descriptive statistics and correlation matrix.

	Mean	SD	N	1	2	3	4	5	6	7	8
1. Project performance (donation amounts excluding self-donations)	82.15	290.04	614								
2. Lagged project performance (lagged donation amounts including self-donations)	90.95	306.72	604	.06							
3. Strong tie funders	0.35	0.85	614	.26***	.16**						
4. Weak tie funders	0.31	0.75	614	.28***	.08	.33***					
5. Latent tie funders	0.38	1.06	614	.34***	.16**	.31***	.27***				
6. Lagged updates	0.05	0.23	604	.01	.07	.04	.11**	.05			
7. Lagged Facebook	0.15	0.45	604	.25***	.11**	.21***	.14**	.19**	.05		
8. Lagged tweets	0.29	0.97	604	.10*	.12*	.24***	.14***	.30**	.10*	.31***	

SD: standard deviation.

***: $p < .001$; **: $p < .01$; *: $p < .05$.

Table 3. Role of tie strength in project success.

Proportion	Projects	N	M	SE
Strong tie funders	Failed	5	41.33%	7.04%
	Successful	5	30.38%	2.53%
Weak tie funders	Failed	5	24.67%	5.97%
	Successful	5	31.21%	2.59%
Latent tie funders	Failed	5	18.42%	5.75%
	Successful	5	36.13%	2.79%

SE: standard error.

Hypothesis 1 posits a positive effect of the number of *project updates* on project performance. Table 4 (Model 5) shows that the lagged project updates have a positive, significant relation with project performance ($\beta = .26, p < .01$), confirming Hypothesis 1.

Hypothesis 2 posits a positive effect of the number of social media messages by the project creator(s) on project performance. Table 4 (Model 5) shows that *lagged tweets* have a positive, significant relation with project performance ($\beta = .26, p < .001$), but *lagged Facebook messages* do not show a significant effect on project performance ($\beta = -.06, p = \text{n.s.}$). Therefore, Hypothesis 2 is only partly supported.

Hypothesis 3 posits a moderating effect of social media messages by the project creator(s) on the effect of tie strength on project performance. *Lagged Facebook messages* interact negatively but not significantly with strong ($\beta = -.06, p = \text{n.s.}$) and positively but not significantly with weak ($\beta = .05, p = \text{n.s.}$) and latent ties ($\beta = .05, p = \text{n.s.}$). *Lagged Tweets* do not interact significantly with strong ties ($\beta = .03, p = \text{n.s.}$) but show a significant negative interaction with weak ($\beta = -.14, p < .001$) and latent ties ($\beta = -.12, p < .001$). Thus, Hypothesis 3 is only partly confirmed.

Additionally, we tested whether funders are affected differently by the *lagged performance* of the crowdfunding project. Table 4 (Model 5) shows that funders of all tie strengths are negatively, significantly affected by donations of the previous day. This negative interaction effect is the strongest for strong ties ($\beta = -.27, p < .001$), followed by weak ties ($\beta = -.14, p < .001$) and relatively the mildest for latent ties ($\beta = -.09, p < .001$).

To check the robustness of the interaction effects, we also ran separate regression models for each significant interaction variable. All interaction effects appear to be robust. The interaction between tweets and tie strength implies that the amounts funded by weak or latent tie funders are somewhat reduced when high numbers of tweets are posted compared to what one would expect, based on the direct effects. Fewer tweets appear to result in somewhat higher amounts contributed by weak and latent tie funders than expected on the basis of the direct effects. Similar interaction effects are found for lagged project performance. This means that differences in relative contributions to project performance by tie strength will decrease when the number of tweets and funded amounts in preceding days increase, that is, the relative importance of strong ties diminishes while that of weak and latent ties gain relative importance.

Table 4. Linear regression on project performance (log donated amount per day).

	Model 1	Model 2	Model 3	Model 4	Model 5
(Constant)	.51 (.05) ^{***}	.34 (.04) ^{***}	.33 (.04) ^{***}	.29 (.03) ^{***}	.13 (.03) ^{***}
Lagged project performance (log)	.34 (.04) ^{***}	.08 (.03) ^{**}	.07 (.03) [*]	.03 (.03)	.18 (.03) ^{***}
Strong tie funders		.37 (.04) ^{***}	.37 (.04) ^{***}	.45 (.04) ^{***}	.91 (.06) ^{***}
Weak tie funders		.47 (.04) ^{***}	.47 (.04) ^{***}	.55 (.04) ^{***}	.72 (.05) ^{***}
Latent tie funders		.29 (.03) ^{***}	.28 (.03) ^{***}	.32 (.03) ^{***}	.56 (.05) ^{***}
Lagged updates			.32 (.11) ^{**}	.28 (.11) [*]	.26 (.10) ^{**}
Lagged Facebook posts			-.03 (.06)	.02 (.09)	-.06 (.08)
Lagged Twitter posts			.03 (.03)	.23 (.04) ^{***}	.26 (.04) ^{***}
Strong tie funders x Lagged Facebook messages				-.12 (.05) [*]	-.06 (.04)
Weak tie funders x Lagged Facebook messages				-.05 (.07)	.05 (.07)
Latent tie funders x Lagged Facebook messages				.06 (.03)	.05 (.03)
Strong tie funders x Lagged tweets				.00 (.02)	.03 (.02)
Weak tie funders x Lagged tweets				-.12 (.03) ^{**}	-.14 (.03) ^{***}
Latent tie funders x Lagged tweets				-.06 (.01) ^{***}	-.12 (.01) ^{***}
Strong tie funders x Lagged project performance (log)					-.27 (.03) ^{***}
Weak tie funders x Lagged project performance (log)					-.14 (.03) ^{***}
Latent tie funders x Lagged project performance (log)					-.09 (.02) ^{***}
df	1	4	7	13	16
R ²	.12	.57	.58	.62	.70
ΔR ²	.12 ^{***}	.45 ^{***}	.01 [*]	.04 ^{**}	.08 ^{***}
Number of observations	604	604	604	604	604

***p < .001; **p < .01; *p < .05.

Additional analysis

The results of the linear regression show an unexpected difference in effects of social media messages: While tweets influence project performance the day after, no such effect is found for Facebook messages. We, therefore, explored the content of the social media messages, which varied from direct requests for donations, “thank you” messages, updates on the crowdfunding campaign, and other new and relevant information. The philanthropy literature emphasizes that direct requests for a monetary contribution—solicitation—is far more effective in raising donations than messages not including this request (Bekkers and Wiepking, 2010). In other words, not all social media messages may have the same impact on project performance: Tweets or Facebook messages including a solicitation may be a far better predictor of project performance than messages without a solicitation.

Using content analysis, we determined the number of messages including a solicitation. Two independent researchers classified tweets and Facebook messages using such words as “help,” “donate,” “support,” and “join in” as solicitation messages. We did not consider thank you messages that included any of these words. In addition, we classified messages that included a link to the Voordekunst project page with the donation button as a solicitation. The reliability of the human-coded quantitative analyses was measured according to Krippendorff’s alpha (Hayes and Krippendorff, 2007). Since $\alpha = .95$, we conclude that the reliability of the refined measure is very high. The two researchers discussed any deviations in their coding and reached consensus on a single final score for each message. Table 5 presents the results of the linear regression for three types of social media messages, including all messages, solicitation messages only, and non-solicitation messages.

Table 5 reveals that solicitations posted on Facebook influence the relation between funders of different tie strengths and project performance. Strong tie funders show a significant negative interaction effect ($\beta = -.23, p < .005$), followed by weak ties not significantly affected ($\beta = -.12, p = \text{n.s.}$) and latent tie funders positively affected ($\beta = .13, p < .05$). Table 5 also shows that solicitations on Twitter do not significantly interplay with tie strength; the interaction effects of tweets are caused entirely by non-solicitation messages. Although non-solicitation tweets do not have a significant impact on the contribution of strong tie funders to project performance ($\beta = .02, p = \text{n.s.}$), they negatively affect weak and latent ties in their contribution to project performance ($\beta = -.19, p < .001$ and $\beta = -.12, p < .001$, respectively).

Conclusion and discussion

In this article, we asked the following question: How do crowdfunding project creators use social media to activate known and unknown funders in an effort to create economic value? Our analyses revealed that latent tie funders, namely, people unknown to project creators, are positively associated with project performance. This means that successful projects appear to have attracted higher proportions of latent tie funders. In accordance with prior research (e.g. Agrawal et al., 2015; Zhang and Liu, 2012), we find that prior project performance positively affects current-day project performance. This positive

Table 5. Role of content of Facebook posts and tweets on project performance.

	Full model All messages	Full model Solicitation messages	Full model Informative messages (excl. solicitation messages)
Linear regression log donated amount (excl. self-donations)			
(Constant)	.14 (.03) ^{***}	.19 (.03) ^{***}	.13 (.03) ^{***}
Lagged project performance (log)	.18 (.03) ^{***}	.18 (.03) ^{***}	.18 (.03) ^{***}
Strong tie funders	.91 (.06) ^{***}	.92 (.07) ^{***}	.92 (.06) ^{***}
Weak tie funders	.71 (.05) ^{***}	.64 (.06) ^{***}	.72 (.05) ^{***}
Latent tie funders	.56 (.05) ^{***}	.27 (.04) ^{**}	.59 (.05) ^{**}
Lagged updates	.26 (.10) ^{**}	.31 (.10) ^{**}	.26 (.10) ^{**}
Lagged Facebook	-.11 (.08)	-.06 (.12)	-.10 (.10)
Lagged Twitter	.28 (.04) ^{***}	.10 (.12)	.31 (.05) ^{***}
Strong tie funders x Lagged Facebook messages	-.02 (.05)	-.23 (.11) [*]	-.03 (.05)
Weak tie funders x Lagged Facebook messages	.13 (.07)	.12 (.11)	.11 (.11)
Latent tie funders x Lagged Facebook messages	.04 (.03)	.13 (.06) [*]	.05 (.04)
Strong tie funders x Lagged tweets	.02 (.02)	-.01 (.04)	.02 (.02)
Weak tie funders x Lagged tweets	-.15 (.03) ^{***}	.14 (.09)	-.19 (.04) ^{***}
Latent tie funders x Lagged tweets	-.11 (.01) ^{***}	.09 (.08)	-.12 (.02) ^{***}
Strong tie funders x Lagged project performance (log)	-.28 (.03) ^{***}	-.25 (.03) ^{***}	-.28 (.03) ^{***}
Weak tie funders x Lagged project performance (log)	-.15 (.03) ^{***}	-.14 (.03) ^{***}	-.14 (.03) ^{***}
Latent tie funders x Lagged project performance (log)	-.08 (.02) ^{***}	.00 (.02)	-.10 (.02) ^{***}
df	16	16	16
R ²	.70	.65	.71
Number of observations	604	604	604

***p < .001; **p < .01; *p < .05.

effect can be explained by herding behavior, which means that potential funders follow the behavior of peers—visible on social media and the crowdfunding platform—and provide funding to the project. In the case of project updates and tweets, we find that promotional activities by the project creator have a positive effect on donation amounts on the subsequent day. However, Facebook messages do not show a significant effect on project performance.

Our results imply that it matters who invests in crowdfunding projects. Project creators often depend on friends and family (who we call “strong ties”) for initial funding (Mollick, 2014). Our analysis, however, shows that weak and latent ties—the latter comprising people who have not previously been part of the project creator’s network—are more important for overall project performance. Also, social media are helpful in improving project performance, although in different ways. In our sample, Facebook messages that included a solicitation (Bekkers and Wiepking, 2010) were effective in increasing latent ties funding. However, Twitter messages containing informative generic news on the crowdfunding campaign actually reduced the relative importance of latent ties for project performance. A possible explanation is that the effect of solicitation and informative messages depends on the type of social media channel. It is suggested that Twitter is used for sharing opinions and information rather than for online socializing, while Facebook is more popular for social interaction (Hughes et al., 2012). Alignment with the nature of the social network may cause solicitations to be more effective on Facebook and informative messages more effective on Twitter.

Also, our findings show that funders of different tie strengths are affected differently by social media activities. Surprisingly, we found that sending more tweets negatively interacted with weak and latent ties. These undermining effects may be explained by the bystander effect which suggests that when there are many others nearby who might help, people refrain from providing help because they trust that somebody else has already done so (Chiu and Chang, 2015). Indeed, prior crowdfunding studies have suggested that the bystander effect is an important social mechanism that influences the behavior of potential crowdfunders (Agrawal et al., 2013; Mollick, 2014). From this perspective, social network size is inversely related to the likelihood of support (Latané and Nida, 1981) because when more people are nearby or have been asked to provide support, the likelihood that individuals will actually provide support declines.

It can be argued that weak and latent ties are particularly vulnerable to bystander behavior since those ties communicate mainly on group-wide media (Haythornthwaite, 2005) such as social media networks, which tell potential funders that many others have also received the solicitation. As a result, these people may feel less inclined to respond to the request. By contrast, people with strong ties often engage in private or person-to-person means of communication (Haythornthwaite, 2005), in addition to group-wide media. In their private communication channels, it may be less visible that other people also receive the solicitation which can decrease the likelihood of bystander effect. Thus, we suggest that the negative interaction between the number of tweets and weak and latent ties on project performance may be explained by the transparency in online crowdfunding networks of who has received and responded to donation requests. This is likely to increase the bystander effect among people related through weak and latent ties who received the same request.

In contrast, negative interaction effects were not observed for project updates and tie strength on the crowdfunding platform. A possible explanation may be that people visiting the crowdfunding platform website are actively searching for information on a potential project donation and are further in their decision process, which makes them less vulnerable for the bystander effect. In contrast, people reading tweets are often being informed about the crowdfunding project for the first time and are, therefore, in earlier stages of the decision process, which may make them more vulnerable for the bystander effect. An alternative explanation for this variance in bystander effects between twitter and the crowdfunding platform might be the differences in network size, but to validate whether this is indeed the case requires further research.

Finally, our findings indicate that online activities shape the effect of tie strength on project performance in different ways. Online communication extends the reach of the request for funding, and herding behavior resulting from peer influence in social networks seems to enhance project performance. At the same time, undermining effects are observed since being aware that other people have also received the same funding request negatively influences a person's decision to fund.

Our article provides two distinct theoretical contributions. First, we contribute to the theory on social networks, including the economic implications. We extend the body of work on latent ties (Haythornthwaite, 2002, 2005; Jack, 2005) and add to the discussion on different sorts of ties, which—as we demonstrate—is an important dimension in explaining how people can capitalize on the potential economic value embedded within their social networks. Our analyses confirm that created value differs per type of tie. We also show how different forms of online activity influence the relationship between tie strength and the financial performance of the project.

Second, and related to this, we contribute to an expanding body of literature on crowdfunding, responding to a call for more insight into the behavior of project funders (Burtch et al., 2014). In particular, we identified important determinants of funders' behavior and showed what project creators can do to mobilize their social networks, harness the potential of social media, and improve the effectiveness of their crowdfunding effort. We build on prior studies that identified which crowd is potentially most beneficial (e.g. Belleflamme et al., 2013), but add a social network perspective as a useful way to identify the *ties* within the crowd that can yield optimal performance benefits. Prior research showed that friendfunding networks are usually not enough to realize successful crowdfunding (English, 2013; Mollick, 2014). Thus, by pointing out how project creators can extend their online crowdfunding communities, we give an important impetus to crowdfunding as a serious source of economic value creation for creative entrepreneurs.

Limitations and future research

While this article provides strong evidence for our argument, we recognize its limitations, which can, however, provide opportunities for future research. First, our analysis of the significance of latent ties for project success is based on 10 case studies. These results could be validated by analyzing a larger number of crowdfunding projects. Second, in the discussion of the effect of social media messages, we described herding behavior and the bystander effect. It would be useful to further test this finding in empirical research. Third,

we investigated how the different tie strengths of funders' donation behavior are shaped by social media usage. Other factors that potentially influence donation behavior in crowdfunding projects should also be investigated, for instance, the funders' identification with their crowdfunding project goals. Fourth, investigating the role of tie strength in social and cultural value creation in crowdfunding would be worthwhile. Crowdsourcing research that distinguishes between the heavyweight and lightweight model (Budhathoki and Haythornthwaite, 2013; Haythornthwaite, 2009) suggests that strong ties in particular create social value. However, to determine whether these models also apply to crowdfunding calls for further research. Fifth, our suggestion that the effectiveness of informative and solicitation messages on Facebook and Twitter may be driven by the nature of the social network should be further investigated.

Finally, our study focused on the role of the strength of relations between project creators and funders in reward-based crowdfunding. We conclude that latent ties are important for project success in reward-based crowdfunding. In lending- and equity-based crowdfunding, where target amounts are substantially higher,⁴ one may expect that it becomes even more important to mobilize funders beyond the project creator's own network. At the same time, one could argue that funder mobilization may work differently here since funders receive a financial return for their monetary contribution. Our study also focused on reward-based crowdfunding for cultural projects. Whether our results would also apply to reward-based crowdfunding in other sectors (e.g. technology) is an empirical question for further investigation. Indeed, the relevance of tie strength in these different types of crowdfunding projects are deserving of more scholarly attention in future.

Practical implications

Our study reveals that successful crowdfunding projects do mobilize previously unknown funders. Project creators can extend the reach of their open call for donations on social media. Our results indicate that the effectiveness of social media messages does not follow a simple formula: Higher frequency of social media messages does not automatically result in higher project performance. Rather, the effects vary across the different tie strengths. Therefore, the number of social media messages needs to be carefully balanced: not too many and not too few messages. In addition, project creators' messages should clearly indicate that they are asking for financial support, as messages without clear solicitation seem to be less effective in collecting donations.

This study was an effort to analyze a number of crowdfunding cases. Our findings shed light on how known and unknown funders can be mobilized using social media and platform communication to effectively create economic value.

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Notes

1. <http://www.crowdfunding.nl/wp-content/uploads/2012/05/92834651-Massolution-abridged-Crowd-Funding-Industry-Report1.pdf>
2. <http://www.crowdfunding.nl/wp-content/uploads/2012/05/92834651-Massolution-abridged-Crowd-Funding-Industry-Report1.pdf>
3. “Completed” means that the crowdfunding initiative for the project was opened and closed on the platform during the time span investigated, and does not relate to actual implementation of the project.
4. <http://www.crowdfunding.nl/wp-content/uploads/2012/05/92834651-Massolution-abridged-Crowd-Funding-Industry-Report1.pdf>

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