AN INVESTIGATION INTO THE EFFECTS OF MESSAGE FRAMING ON CROWDFUNDING FUNDING LEVEL

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ABSTRACT

This study investigates two new informational cues (i.e., positive and negative framing), which are typically hidden in project descriptions of crowdfunding projects, and examines two research questions 1) How do positive and negative framing affect funding level? 2) Do public updates moderate the effects of these framings on funding level? We test these research questions using data from 644 technological gadget projects posted on a popular crowdfunding website over two years. We further investigate our hypotheses using three laboratory studies where we replicate the above effects on backing intention of backers. Results suggest that positive framing does not have a direct effect on funding level, but on the other hand, negative framing does have a positive effect on funding level. Moreover, results indicate that public update positively affects funding level and increases the positive effect of negative framing on funding level. Results also show that the combination of positive framing and public update has a negative impact on funding level. However, according to our experiments, a negatively framed update decreases the negative effect of a positively framed campaign on backing intention.

Keywords: Positive framing; Negative framing; Public update; Funding level

1. Introduction

Over the last decade, entrepreneurs have shifted away from traditional fundraising methods—in which a small number of investors financially support a project—in favor of crowdfunding, in which a large pool of investors can be used to generate the finances needed for creative ideas [Gamble et al., 2017; Gleasure & Feller, 2018; Kuppuswamy & Bayus, 2018; Mollick, 2014; Mollick & Kuppuswamy, 2014]. There have been many successful crowdfunding campaigns so far such as Eric Migicovsky's E-Paper Watch (Pebble) that received over $10M from more than 68,000 backers. Given the importance of crowdfunding, past studies examined the roles of various campaign-related factors (e.g., Mollick, 2013, 2014; e.g., Mollick & Kuppuswamy, 2014) on crowdfunding success. Among the campaign-related factors, narrative (e.g., message framing) is one of the important factors influencing customers' decisions (e.g., Rothman et al., 1993; Shiv et al., 1997) because a large portion of a crowdfunding campaign is the project description. Although studies in crowdfunding literature have reported the effects of some textual factors, such as concrete language (e.g., Larrimore et al., 2011; Toma & D'Angelo, 2015), interactive language [Parhankangas & Renko 2017], charismatic language [Anglin et al., 2014], precise language [Short & Palmer, 2008], and distinct language [Kim et al. 2016] on crowdfunding success, there are inconsistencies regarding the effects of the key narratives (i.e., positive and negative framing) in project descriptions on funding success.

On the one hand, some studies have reported that positive framing, the degree to which a message uses positive words to express benefits, leads to the desired outcome (e.g., Chen & Chang 2016; Gorbatai & Nelson 2015; Shiv et al. 1997). For example, in their study of crowdfunding, Allison et al. [2015] found that positive framing increases microloan attractiveness and success. On the other hand, some studies demonstrate that negative framing, the degree to which a message uses negative words to express how an offering reduces costs or negative consequences, can trigger more favorable results if the task is elaborate enough for respondents (e.g., Amatulli et al., 2017; Block & Keller 1995; Kim et al. 2016; Olsen et al., 2014). These mixed results in the crowdfunding literature underscore the

need for developing a conceptual model in the context of crowdfunding to examine the effects of message framing (i.e., positive and negative framing) on funding success and to understand what specific type of message framing works better on a crowdfunding platform.

Moreover, our study investigates the interaction between an important online tool (i.e., public update) and message framing. Crowdfunding creators have the ability to post public updates (e.g., progress report, new content, reminder, answer a question, new rewards) to keep the backers informed of a project's progress [Xu et al., 2014]. According to Xu et al. [2014], the chance of a campaign with an update being successful is approximately 26% more than a similar campaign without an update. This update mechanism increases the project's transparency and communicates the creators' credibility and preparedness [Kaartemo, 2017]. Since public updates can attract potential backers' attention to projects' descriptions, in this study we investigate the moderating effect of public updates on the effectiveness of message framing to examine how public updates strengthen or weaken the effect of message framing, the main focus of this research, on funding success.

Therefore, our article examines two research questions. First, we study the effects of two key rhetorical devices embedded within project descriptions—positive framing and negative framing, which are considered vital in word-of-mouth literature (e.g., Rothman et al., 1993; Shiv et al., 2004). We focus on the effects of these rhetorical factors on funding level, our dependent variable, which is defined as a project's financial accomplishment level and is measured as the total raised money ($) over a project's funding cycle. Second, we study the moderating effect of an important signal—public update, which is the total number of updates during a project's lifetime. To understand the complex nature of crowdfunding endeavors, we develop a theory-based model using regulatory focus theory [Higgins, 1997] as our underlying theoretical framework.

The contributions of our article are threefold. First, to the best of our knowledge, this is one of the first studies that explore the effects of key rhetorical devices embedded within crowdfunding projects' descriptions—positive and negative framing on the funding level of crowdfunding projects. Moreover, our multi-method approach provides much-needed insights and confidence while developing project information for crowdfunding initiatives. Second, through our experiments, we analyze the effects of not only positive and negative framing but also a neutral language, which cannot be easily captured through the empirical studies frequently used in the crowdfunding literature. Third, our article examines how an important crowdfunding campaign-related factor, i.e., public update, moderates the relationship between rhetorical devices and funding level. The findings help to justify the inconsistency in previous studies regarding the effect of message framing on funding success.

2. Theoretical Background

We draw upon regulatory focus theory [Higgins, 1977] as a basic framework that supports the hypotheses relating to funders' reactions to message framing. Regulatory focus theory suggests two underlying processes through which an individual reacts to an information cue: promotion focus and prevention focus. According to this theory, advertising messages that are focused on gains (e.g., "Get energized") are more impactful when the body of the message is written in promotional terms (e.g., emphasizing the positive effects of consuming a drink). However, messages that are centered around losses ("Don't miss out on getting energized") are more influential when the body of the message is written in prevention-focused terms (e.g., emphasizing the negative effects of not drinking a product) [Lee & Aaker, 2004]. Creators of crowdfunding projects have the opportunity to frame the projects' descriptions using either promotion-focused or prevention-focused language. To choose between these framings, creators can rely on regulatory focus theory to explain the behavior of individuals on a crowdfunding platform and predict the reactions of potential backers to different types of message framing.

We use regulatory focus theory as our overarching framework for the following reasons. First, this theory explains how individuals (i.e., potential backers) perceive different information cues (i.e., positive and negative framing) and make decisions accordingly [Gamache et al., 2015]. Second, prior literature has suggested the importance of regulatory focus theory in an individual's financial decision making [Florack et al., 2007; Zhou & Pham, 2004]. Third, due to the uncertainties about crowdfunding projects, we know that creators and backers have asymmetric information. As a result, potential backers do not have adequate knowledge and expertise to evaluate creators and their ideas [Ahlers et al., 2015]. Considering the nature of the crowdfunding context, we use regulatory focus theory to explain how a creator's decision on message framing as an information cue reduces the perceived investment risk, affects a potential backer's interpretation of that information cue, and influences the decision to contribute to the project. Next, we develop a set of hypotheses derived from regulatory focus theory.

3. Hypotheses Development

3.1.   Message Framing

A major component of online campaigns is the description of projects. Creators communicate and promote their ideas within descriptions. These communications provide opportunities for creators to apply marketing tools and persuade potential backers to contribute. However, potential funders are uncertain about the product attributes fulfillment and the credibility of creators and, as a result, they seek information/cues on the platform to help them evaluate campaigns. This uncertainty is one of the major elements of funders' perceived risk associated with projects (e.g., Bauer, 1960; Cunningham, 1967), and creators must aim to reduce this risk. One important way to communicate the value of a crowdfunding campaign is message framing [Das et al., 2008]. Therefore, the crucial empirical question is whether specific framing (i.e., positive or negative) of the creators' communications with potential backers helps creators in marketing their products, reducing funders' perceived investment risk, and finally raising the funds they need.

There are two broad categories of message framing that are positive (i.e., gain-focused) and negative (i.e., loss-focused) framing. We define positive framing as the degree of association of language with benefits [Chang & Lee, 2009; Rothman et al., 1993] and negative framing as the degree of association of language with costs [Rimer & Kreuter, 2006; Rothman et al., 1993]. According to Shiv et al. [2004], there are controversies over the effectiveness of positive framing (i.e., mentioning the gains of buying a product) and negative framing (i.e., mentioning the costs of not buying a product). Some studies show that negative framing is more effective than positive framing when the level of elaboration is high (e.g., Rothman et al., 1993). The underlying theory for these works is prospect theory, which was originally developed by Kahneman & Tversky [1979]. Other studies have reported opposite findings, suggesting that positive framing is more influential than negative framing when elaboration is high (e.g., Ahluwalia et al., 2000; Shiv et al., 2004). Therefore, empirical studies provide us with mixed results regarding the effectiveness of positive versus negative framing.

Regulatory focus theory [Higgins, 1997] helps us explain and predict the behavior of the potential funders on a crowdfunding platform. According to this theory, a message is perceived as more helpful by viewers when there is congruency between the message and viewers' self-regulatory focus (e.g., Cornelis et al., 2012; Higgins et al., 2011). In the crowdfunding context, potential backers are exposed to new and risky ideas, and therefore, they react positively to information cues that are prevention focused [Zhao et al., 2017]. These cues highlight how supporting an idea can help backers reduce negative consequences. The congruency between a backer's expectation of a message and what is presented in the message increases the helpfulness of the message (e.g., Cornelis et al., 2012; Higgins, 1997). In other words, potential backers trust these projects because the negatively framed message in the description helps them determine why they should contribute to these projects to avoid loss.

According to regulatory focus theory, positive framing can be perceived as more helpful when the focus of the message is on promoting an offering (e.g., Ciuchta et al., 2016; Gamache et al., 2015). However, considering the risky nature of crowdfunding projects, individual backers are more prevention focused than promotion focused. Therefore, positive framing does not necessarily provide potential backers with useful information about why they should invest in a project. It is the creators' job to convince potential backers to make risky decisions and invest in new and innovative products, but positive framing does not provide backers with such helpful information. Accordingly, we propose that viewers of a crowdfunding project do not put much weight on positive words/frames in the message and react negatively to this type of framing. Potential backers search for cues in the message that give them strong reasons why investing in a specific new idea helps them avoid experiencing the negative consequences they might face using other available products in the market. Given the distinct effects of positive and negative framing, we expect that potential funders will benefit more from a negative framing in comparison to a positive framing. Hence, we hypothesize the following:

> **H₁**: *The greater the positive framing in the description of projects, the lesser the funding level*
>
> **H₂**: *The greater the negative framing in the description of projects, the greater the funding level*

3.2.   Public Updates

Since crowdfunding projects are innovative and potential backers are uncertain about the outcome of the projects, backers have to make risky decisions regarding their monetary contributions. Perceived risk is a critical determinant of consumers' willingness to support new offerings [Glover & Benbasat, 2010; Grewal et al., 1998; Puto et al., 1985]. Therefore, creators must try to send quality signals about their credibility to reduce this risk and to convince funders to support the projects [Ahler et al., 2015; Hobbs et al., 2016]. One of the important mechanisms available to creators to reduce uncertainty among backers is public updates, which are a crucial part of a campaign [Hui et al., 2012] and have been used in the crowdfunding literature for predicting the outcome of a campaign (e.g., Fondevila-Gascon et al., 2015; Hobbs et al., 2016; Kuppuswamy & Bayus, 2018, Mollick, 2013). Public updates represent that creators intend to inform potential backers of the progress of projects [Mollick, 2014]. A potential backer, who checks in on

an active project at different times over the course of the funding cycle, will see the number of times a creator updated the project. Such transparency and persistence increase the chances that the project will gain additional backers. According to Xu et al. [2014], there are different types of updates such as progress reports, reminders, and new content that creators use to communicate with potential backers. But regardless of the update's theme, the mere presence of updates shows that a creator is serious about the next steps of a project and that the project is progressing. Keeping backers updated over time reduces the perceived investment risk among potential backers, increases their trust, and demonstrates the creators' credibility and preparedness [Kaartemo, 2017]. Therefore, we hypothesize:

H₃: *The greater the number of public updates, the greater the funding level*

3.3. Moderating Effect of Public Updates

The literature supports the positive effects of public updates on funding level, as this signal exhibits the credibility of the creator (e.g., Kuppuswamy & Bayus, 2018; Mollick, 2014). In addition to the direct effect of public updates on a campaign, we predict a significant interaction between public updates and message framing. Regulatory focus theory suggests that funders focus more on negative framing, considering the risky nature of the crowdfunding. Therefore, funders expect to be exposed to a counterfactual message rather than a promotional message. However, there are uncertainties and asymmetric information regarding the narratives as they are solely creators' claims [Pavlou & Gefen, 2004]. Since funders are prevention focused, presence of update increases the funders' trust in the highlighted risks and claims existed in a negatively framed message [Kaartemo, 2017] and, as a result, increases the effect of negative framing on funding level. On the other hand, as we discussed, positive framing does not necessarily help funders make a decisive decision about investing in a project. When funders are exposed to a project that is updated and the message is still positively framed, they might assume that the project will not help them avoid any risk or negative consequences as the expected information is not presented even after posting updates. In addition, lack of update on a positively framed message can create the perception among funders that following updates in the future might present the diagnostic information they need in order to consider a product for investment [Feldman & Lynch, 1988]. Hence, we propose that the presence of an update on a positively framed message can adversely affect funders perception.

Moreover, Kickstarter ranks the projects on the website based on popularity. The ranking of a project is mainly associated with the success of the project and especially the number of daily backers supported the project [Zatko, 2017]. Therefore, creators must generate online traffic to their projects' pages to increase the chance of receiving more daily contributions (even from current funders) and improving their ranking on the website [Moreno & Martinez, 2013]. The main on-page tool that creators can use to generate the traffic is public update (e.g., Kuppuswamy & Bayus, 2013). As a result of an update, current funders will be notified [Xu et al., 2014] and might reprocess the project description after receiving the notification. This can intensify the previously discussed effects of the message framing. Since positive framing is not very informative (i.e., not prevention focused according to regulatory focus theory), the negative effect of positive framing will be strengthened by posting an update and making backers process the non-informative information again. After this reprocessing, funders might avoid making more contributions. Therefore, the ranking of the project will not be improved, and the chance of attracting new funders will be decreased. This intensifies the negative impact of the promotion focused message. Similarly, the positive effect of negative framing will be strengthened because of reprocessing the useful information (i.e., prevention focused) after posting an update. In this case, funders might consider contributing to the project again. Therefore, the overall project ranking will be improved, and new funders can be attracted. In general, the presence of an update can reinforce the message framing effects. Thus, we hypothesize:

H₄: *Public updates negatively moderate the relationship between positive framing and funding level*

H₅: *Public updates positively moderate the relationship between negative framing and funding level*

The conceptual model and hypothesized relationships are presented in Figure 1. We take a multi-method approach and perform two sets of studies to investigate the above hypotheses. First, we examine empirical data from 644 technological gadget projects posted on the popular crowdfunding website *Kickstarter*, where we use generalized linear model (GLM) and control function approach [Albuquerque & Bronnenberg, 2012] to estimate the effects and to account for endogeneity. Second, we further investigate our hypotheses with three validation laboratory studies, with backing intention as our dependent variable, and provide further support to our theoretical model.

4. Methodology
4.1. Empirical Study
4.1.1. Data

To test the above hypotheses, we collected data on projects categorized under "technology" from a popular crowdfunding platform called *Kickstarter*. Projects were posted in 2014 and 2015. Within the "technology" category, we particularly focused on all the projects in the "gadgets" subcategory. The total sample size in this study is 644 projects. Then, for each of these projects, we collected all the available information about the project, including the

number of updates, the experience of the creators, the presence of a social media page (e.g., Facebook and Twitter) associated with a project, video presence, number of images, number of words, number of FAQs, number of comments, number of rewards, and project's goal. In addition to these variables, we collected all the project descriptions for content analysis to uncover message framings embedded in the project descriptions.

4.1.2.   Measures

Dependent Variable - Funding Level. We define funding level as the project's accomplishment level. We use dollar value ($) received over a project's funding cycle to measure funding level. By using the dollar value instead of a dummy variable (e.g., success = yes or no), we can observe the marginal effects of even a small change in the independent variables on the funding level.
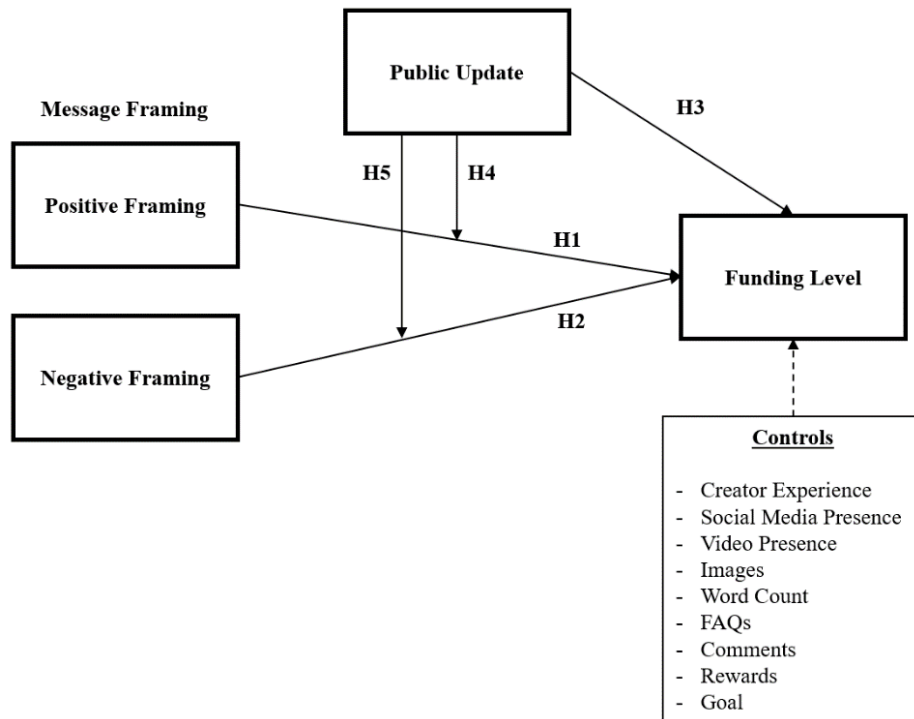

Figure 1. The Hypothesized Model

Positive/Negative Framing. To measure the message framing in project descriptions, we use a textual-analytics technique, Linguistic Inquiry and Word Count (LIWC), which is a popular natural-language processing software developed to identify the expression of emotions (e.g., Alpers et al., 2005; Kahn et al., 2007; Tausczik & Pennebaker, 2010). The software analyzes the input text and reports different textual information embedded in the message, including positive and negative words. The software counts the number of positive and negative words in a text to report these two outcomes. Six hundred twenty words are listed in its dictionary as positive words (e.g., *fast* and *well-designed*), and 744 words are listed as negative words (e.g., *slow* and *crash*).

Public Update. Public update represents a creator's effort to keep funders informed of the progress of a project [Mollick, 2014]. Public update is measured by the number of times a creator posts updates on a project's page during a project's lifetime.

Control variables. Extant literature supports the effects of some communicative signals (e.g., Kuppuswamy & Bayus, 2018) on crowdfunding success. Therefore, we have controlled for the following variables: *Creator experience* is the number of previously crowdfunding campaigns launched by a creator. *Social-media presence* is a dummy variable that indicates whether a project is linked to a social media page. *Video* represents the presence of a video on the project's web page. *Images* captures the number of images posted by a creator on the project page during the project's lifetime. *Word count* is the number of words used in a project's description. *FAQs* captures the number of frequently asked questions that are answered by a creator. *Comments* is defined as the number of comments written on a project's page. *Rewards* is defined as the number of rewards/prize categories defined by a creator. *Goal* is defined as the initial money a creator requests to launch a product. Table 1 provides a summary of the variables and their operationalization.

Table 1. Variable Operationalization

	Variable	Operationalization
1	Funding Level	The dollar value received over the funding cycle
2	Positive Framing	The number of positive words (e.g., *fast* and *well-designed*) divided by total number of words in the project description.
3	Negative Framing	The number of negative words (e.g., *slow* and *crash*) divided by total number of words in the project description.
4	Public Update	The number of updates over the project duration
5	Creator Experience	The number of previously launched projects by a creator
6	Social Media Presence	Dummy variable (presence of social media=1, otherwise=0)
7	Video	Dummy variable (presence of a video=1, otherwise=0)
8	Images	The number of images
9	Word Count	The number of words in the project description
10	FAQs	The number of frequently asked questions answered by a creator
11	Comments	The number of comments posted on a project's page
12	Rewards	The number of rewards categories defined by a creator
13	Goal	The initial money a creator requests

4.1.3. Model

Our dependent variable (i.e., Funding Level) has a non-normal distribution (Figure 2). As depicted in Figure 2, the mean of funding level is 26090; the standard deviation is 94130, which obviously shows the overdispersion in our dependent variable. Since our dependent variable is non-negative, highly skewed, and zero-inflated, linear regression will not give us unbiased estimates. Moreover, taking the log of funding level is not appropriate, given the fact that the funding level is zero-inflated. According to Gong et al. [2015], dropping the zero values for log-transformation is not desirable given the potential selection bias. Also, we cannot add a small number to the zero values because the estimates are very sensitive to that number [Gong et al., 2015]. Therefore, we use generalized linear model (GLM) [Greene 2011] and a negative binomial distribution to handle our non-negative and zero-inflated dependent variable. This model accounts for overdispersion by adding an additional parameter, which reflects the overdispersion. Figure 3 shows how the model distribution fits the distribution of funding level very well.

Finally, to test our hypotheses, we use the following model in Equation 1. We consider the funding level as the response variable and regress it on a set of predictors whose effects are the focus of the study. Among the independent variables, the distribution of word count, comments, and goal were highly skewed. Therefore, we normalized them using log-transformation:

$$(1) \quad FundingLevel_i = \exp[b_i + PF_i + NF_i + PU_i + (PU_i \times PF_i) + (PU_i \times NF_i) + CE_i + SMP_i + Video_i + Images_i + log(WC_i) + FAQs_i + log(Comments_i) + Rewards_i + log(Goal_i) + e_i]$$

Funding Level is the pledged money ($). Textual elements are *Positive Framing* (*PF*) and *Negative Framing* (*NF*). The moderator is *Public Update* (*PU*). The next two terms are interactions between the textual elements and public update. Controls are *Creator Experience* (*CE*), *Social Media Presence* (*SMP*), *Video*, *Images*, *Word Count* (*WC*), *FAQs*, *Comments*, *Rewards*, and *Goal*. Finally, *e* is the residual. Table 2 provides the descriptive statistics and the correlation matrix of the variables.

4.1.4. Accounting for Endogeneity

To examine the causal effects of the main independent variables (i.e., positive and negative framing) in the regression model, we conducted a set of experiments in section 4.2 to manipulate the message framing directly and observe the effects. Among the other variables in the model, public update can be endogenous because of the simultaneity issue. As the number of updates affects funding level, higher funding levels may make a creator update the project to inform the current backers of the progress of the project and attract new backers. To avoid the bias created by this potential endogenous regressor, we adopt the control function approach [Albuquerque & Bronnenberg, 2012]. The control function approach consists of two stages. In the first stage, we recover the estimated residual by regressing public update (endogenous variable) on all the exogenous variables and an instrumental variable. In the second stage, the estimated that residual from the first-stage regression will be added to the model to control for the endogenous variable.
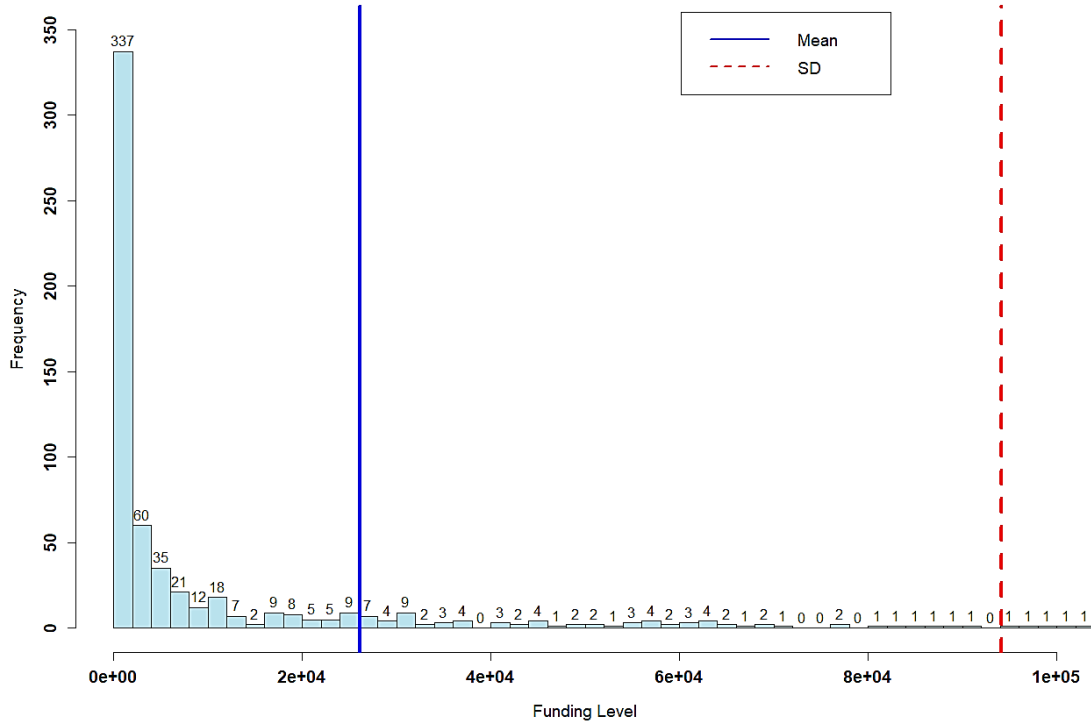
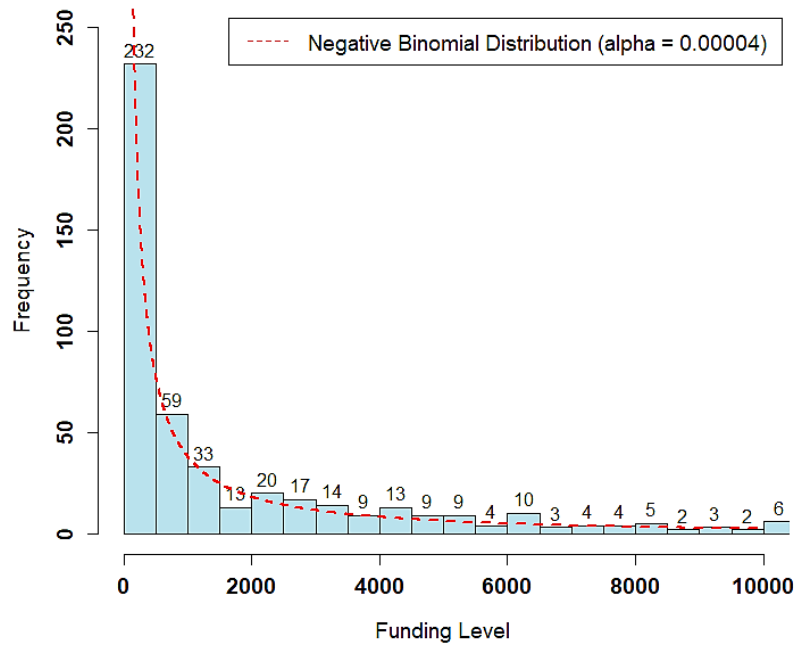Figure 2: Mean and Standard Deviation of Funding Level

Figure 3: Distribution of Funding Level

Table 2. Data Description and Correlation Matrix

	Variable	N	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Positive Framing	644	0.14	0.09	1.00												
2	Negative Framing	644	0.13	0.01	-0.13**	1.00											
3	Public Updates	644	2.96	4.12	0.07	0.07	1.00										
4	Creator Experience	644	1.51	3.64	0.03	0.06	-0.02	1.00									
5	SM Presence	644	0.35	0.47	-0.02	0.03	0.09*	-0.01	1.00								
6	Video	644	0.85	0.35	-0.05	0.17**	0.19**	0.04	0.04	1.00							
7	Images	644	11.77	12.56	0.04	0.16**	0.35**	-0.01	0.00	0.27**	1.00						
8	Word Count	644	759.46	613.95	-0.11**	0.23**	0.24**	-0.02	0.11**	0.29**	0.48**	1.00					
9	FAQs	644	2.39	4.64	0.05	0.08	0.44**	-0.01	0.02	0.17**	0.35**	0.25**	1.00				
10	Comments	644	38.24	175.48	0.02	0.01	0.39**	0.39	0.08**	0.09%	0.15**	0.09%*	0.47**	1.00			
11	Rewards	644	8.77	4.35	-0.01	0.17**	0.33**	0.32	0.03	0.30**	0.46	0.35**	0.31**	0.17**	1.00		
12	Goal	644	49949.6	94704.1	-0.02	-0.07	-0.05	-0.05	-0.02	0.11**	0.06	0.13**	0.02	0.00	0.02	1.00	
13	Funding Level	644	26090.4	94130.9	-0.03	0.19**	0.51**	0.01	0.09**	0.44**	0.55**	0.38**	0.48**	0.33**	0.49**	0.10**	1.00

Note. * 95% CI, ** 99% CI

We select the probability of funding success as the instrument. We suggest that funding level does not affect public updates directly, but it changes public updates by signaling the chance of funding success. As per the policy of crowdfunding platforms, a project is required to reach its funding goal before the funds are transferred to the requestor. If a project does not reach its goal, the funds received are returned to the backers. Therefore, once the creators believe that a project will reach its funding goal, they will be more inclined to post an update. In general, it is not the funding level that impacts public updates but the probability of success that influences the creators' intention to post updates. The probability of success can be measured by the ratio of funds raised divided by the project's goal. Therefore, our instrumental variable will be ($Fund\ Raised/Goal$). This ratio is the percentage (%) of the goal that is fulfilled. This variable predicts the number of public updates but not necessarily the funding level. Therefore, we posit that this variable is exogenous.

To test the relevance of the instrument, we compute the correlation of the instrument with the endogenous variable. We find them to be strongly correlated (p-value < 0.01). We also find that the coefficient estimate for the instrument in the first stage regression is significant (p-value < 0.01), indicating the instrument is relevant. Moreover, the instrument does not have a direct impact on whether our dependent variable shows that the criteria for the instrument variable have been met. Therefore, we added the residual from regressing the public update on the instrument and all other independent variables to the model and estimated the funding level.

4.1.5. Results

We report the results in Table 3. As shown in Table 3, the results based on the Control Function Approach are similar to the main model results. The main differences are the coefficients that are corrected in the new model after accounting for endogeneity. Results show that first, positive framing does not have a significant effect on the funding level (p-value $= 0.29$). Thus, H_1 is not supported. Second, negative framing has a positive effect on the funding level (p-value < 0.01). Thus, H_2 is supported. Third, public update has a strong positive effect on funding level (p-value < 0.01). Thus, H_3 is supported. Fourth, on examining the moderating effects, we found a significant and negative interaction (p-value < 0.05) between positive framing and public update. Therefore, H_4 is supported. However, we found a significant and positive interaction (p-value < 0.05) between negative framing and public update. Thus, H_5 is supported. Finally, along with the message framing and public update, other control variables, including Video, Images, Word Count, FAQ, and Rewards, positively affect funding level.

4.1.6. Robustness Tests

We performed two additional analyses to examine the robustness of our results. First, we test for multicollinearity using ridge regression and calculating Variance-inflation factor (VIF) and found no presence of multicollinearity. Second, in our model, we measured positive (negative) framing as the ratio of the total number of positive (negative)

words to the total number of words in the project description. As another robustness check, we changed the measurement of PF and NF to dummy variables by following the median split approach. According to our new measurement, PF and NF are 1 when the ratio is greater than the median. Otherwise, they are 0. We ran our analysis again, and we got similar results.

4.1.7. Discussion

The empirical analysis of crowdfunding projects from *Kickstarter* shows that message framings do indeed affect the funding level. In particular, we find that positive framing is not an effective way of communicating the message as its effect on the funding level is not significant. Unlike what we hypothesized, positive framing does not significantly affect the funding level. However, positive framing has a negative impact on the funding level under some conditions. For example, results show that public updates turn the effect of positive framing to negative, showing that too many positive words in updates negatively affect the backers' perceptions of the project. When a creator posts updates and yet the framing is positive, it confirms that the project cannot lessen a significantly negative outcome. Therefore, backers may avoid contributing to that project. On the other hand, negative framing positively affects funding level, suggesting the power of negative framing on a crowdfunding platform. In addition, we find a significant and positive effect of public updates on funding level, suggesting that the presence of updates increases the chance of a project getting funded. Finally, we find that public updates positively moderate the effect of negative framing on funding level. This specific finding suggests that 1) negative framing should be preferred over positive framing, and 2) public updates should be negatively framed to be even more effective in affecting the funding level.

Overall, findings suggest that the combination of negative framing and public updates reduces backer uncertainty and helps in raising more funds. These findings can be explained by regulatory focus theory [Higgins, 1997], which suggests that negative framing is more effective than positive framing, especially when the level of elaboration is high and individuals are prevention focused. Given the complex nature of message framing, especially negative framing, we need to design and conduct a set of validation studies to be able to accurately manipulate and observe the effects of positive and negative framing on the success of crowdfunding campaigns. Therefore, in the next section, we replicate the effects of message framing using three laboratory studies.

Table 3. Summary of Results

Variables	Standardized Estimates (Std. Error) Main Model	Standardized Estimates (Std. Error) CF Approach
Direct Effects		
Positive Framing	0.010 (0.193)	0.011 (0.208)
Negative Framing	0.017 (0.180) **	0.012 (0.186) **
Public Update	0.099 (0.022) **	0.086 (0.031) *
Residual (CF Approach)	--	0.010 (0.052)
Moderating Effects		
Public Update × Positive Framing	-0.014 (0.020) *	-0.014 (0.020) *
Public Update × Negative Framing	0.067 (0.155) *	0.066 (0.156) *
Controls		
Creator Experience	0.001 (0.003)	0.001 (0.003)
Social Media Presence	0.004 (0.022)	0.005 (0.025)
Video	0.044 (0.046) **	0.044 (0.047) **
Images	0.025 (0.001) **	0.027 (0.001) **
Word Count	0.013 (0.015) *	0.013 (0.016) *
FAQs	0.022 (0.030) **	0.025 (0.052) **
Comments	0.005 (0.000)	0.008 (0.000)
Rewards	0.019 (0.003) **	0.020 (0.003) **
Goal	0.008 (0.000) *	0.007 (0.000)
AIC	3051	2934.8

Note. * 95% CI, ** 99% CI

4.2. Laboratory Validation Studies

We further test our conceptual model using three validation studies where we replicate the effects of message framing and public updates on backers' intention to contribute. In study 1, we examine whether positive framing (PF), negative framing (NF), and public updates (PU) impact backers' intention to contribute. In study 2, we test the moderating effect of the public updates on the relationships between positive framing and backers' intention to contribute. In study 3, we repeat study 2, but we examine the interaction between public updates and negative framing.

Dependent Variable: The dependent variable in studies 1 through 3 is backing intention. To measure backing intention, we used two questions regarding backers' willingness to contribute to the project and desire to suggest the project to others.

4.2.1.   Validation Study 1: Main Effects of Message Framing and Public Update

The goal of this study is to check the main effects of PF, NF, and PU on backing intention. In this study, we recruited 60 participants on M-Turk (Mean age 37.3 years, 44.1% female).

Design and Participants: To examine each of the direct effects, we use between-groups designs and randomly assigned participants to one of two cells. We presented a project to respondents in one group and presented the same project with a different description to another group. Across these groups, we manipulated PF, NF, and PU. We examined whether the participants' reactions to the projects were sensitive to the manipulation. After being exposed to a crowdfunding project, each participant responded to two questions on backing intentions.

Stimuli: We designed three manipulations, one for each effect: 1) we manipulate PF by presenting two different project descriptions to the respondents: one with positive adjectives and the other one with neutral language, 2) we manipulate NF by presenting 2 different project descriptions to respondents: one with negative framing (e.g., *We know that thin wire cables result in big voltage drops. Longer cables also mean higher resistance and more severe losses. Our product compensates for these losses as much as possible*) and the other one with neutral language, and 3) we manipulate PU by presenting 2 different project descriptions to respondents: one with an update on the project progress, and the other without an update.

Results: Regarding the effect of positive framing, we do not observe a significant difference between the two groups (p-value = 0.08). Regarding negative framing, the average responses to the backing intention are significantly higher in the manipulated group. Thus, the effect of negative framing is significantly positive (p-value < 0.05, M_{High}=3.77; M_{Low}=3.13), supporting H2. A similar result was observed for the effect of public updates on backing intention (p-value < 0.05, M_{High}=3.45; M_{Low}=2.83); thus, H3 is supported. The ANOVA results regarding the direct effects are reported in Table 4.

4.2.2.   Validation Study 2: Interaction between Public Updates and Positive Framing

The goal of this study is to check the moderating role of PU in the relationships between positive framing and backing intention. In this study, we recruited 60 participants on M-Turk (Mean age 38 years, 48.3% female).

Stimuli. To check the moderating effect of PU, we assigned respondents randomly to four different groups with (1) high PF and high PU, (2) high PF and low PU, (3) low PF and high PU, and (4) low PF and low PU. A two-way ANOVA is used to examine the moderating role of PU.

Results: The results of the ANOVA test showed that public update negatively moderates the relationship between positive framing and our dependent variable (p-value < 0.05). Thus H4 is supported. The results are summarized in Table 4, and the interaction effect (i.e., PU $\times$ PF) is shown in Figure 4.

4.2.3.   Validation Study 3: Interaction between Public Update and Negative Framing

The goal of this study is to check the moderating role of PU in the relationships between negative framing and backing intention. In this study, we recruited 60 participants on M-Turk (Mean age 36.6 years, 40% female).

Stimuli. To check the moderating effect of PU, we assigned respondents randomly to four different groups with (1) high NF and high PU, (2) high NF and low PU, (3) low NF and high PU, and (4) low NF and low PU. A two-way ANOVA is used to examine the moderating role of PU.

Results: The results of the ANOVA test show that public updates increase the effect of negative framing on backing intention (p-value < 0.05), thus supporting H5. The ANOVA results are summarized in Table 4, and the interaction effect (i.e., PU $\times$ NF) is shown in Figure 4.

4.2.4.   Discussion

Our laboratory validation studies further support the findings from the empirical study. Results from study 1 replicate the direct effects of message framing and public updates on backing intention. In particular, validation study 1 explores the direct effects of three important signals (i.e., positive framing, negative framing, and public updates) on backing intention. We find that, as we hypothesized, both negative framing and public updates are important cues and both positively affect backing intention. Consistent with our empirical analysis, we do not find a significant effect of positive framing on backing intention. As we expected, positive framing is not effective in increasing funding level. We hypothesized a negative effect of positive framing, but both our empirical and experimental studies show an insignificant effect of positive framing, suggesting that potential backers do not differentiate positive framing from neutral language. Both positive framing and neutral language are ineffective in contributing to funding level. However, negative framing is more effective than both positive framing and neutral language. These findings highlight 1) the importance of using negative framing in project descriptions in comparison to positive framing or neutral language, and 2) the importance of updating backers over the project funding cycle.

Table 4. Results (Laboratory Studies)

Studies	Variables	Backing Intention
Validation Study 1 (Direct Effects)	PF	*p-value = 0.08*
	NF	$M_H= 3.77$; $M_L= 3.13$ *p*-value < 0.05 *
	PU	$M_H= 3.45$; $M_L= 2.83$ *p*-value < 0.05 *
Validation Study 2 (Moderating Effect)	PU × PF	*p*-value < 0.05 *
Validation Study 3 (Moderating Effect)	PU × NF	*p*-value < 0.05 *

Note. * 95% CI, ** 99% CI, PF: Positive Framing, NF: Negative Framing, PU: Public Update
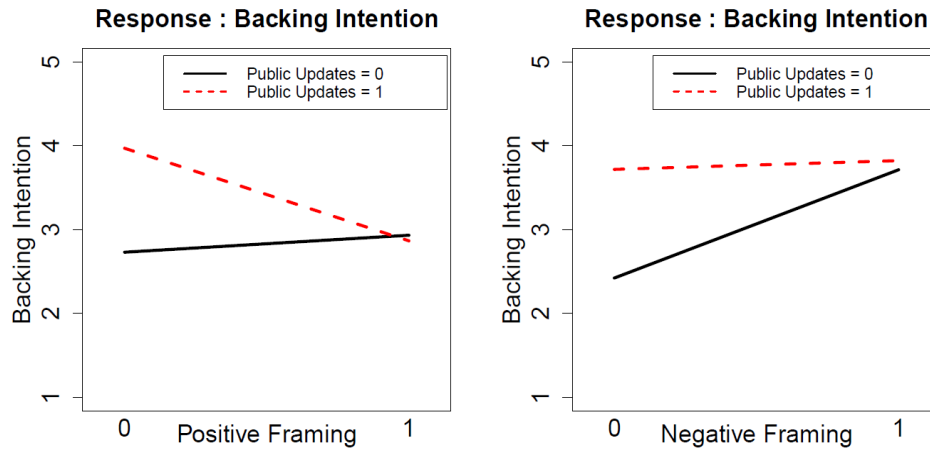

Figure 4. Interactions Between Public Update and Message Framing

Results from studies 2 and 3 replicate the moderating effects of public update on the relationship between message framing and backing intention. Similar to the empirical analysis, in study 2 we find that public update negatively moderates the effect of positive framing on backing intention. Moreover, in study 3, we find that public update positively moderates the effect of negative framing on backing intention. This finding is consistent with our empirical analysis and emphasizes that adding more positive words through public updates adversely impacts the funding level, probably because after posting a positively framed or neutrally framed update, backers are convinced that the project does not help them avoid a negative consequence and the project description is designed to be solely promotion-focused. However, posting more negatively framed updates results in 1) reducing the uncertainty about a project and its next steps and 2) increasing the positive effect of negative framing on backers' intention to contribute because potential backers place more trust in creators' promises after posting of an update, which is evidence of creators' credibility. Summary of all the findings is reported in Table 5.

Table 5. Summary of the Findings

Expectations	Results(CF Approach)	Results(Lab Studies)
Direct Effects		
H$_1$: PF → (-) Funding Level	Not Supported	Not Supported
H$_2$: NF → (+) Funding Level	Supported	Supported
H$_3$: PU → (+) Funding Level	Supported	Supported
Moderating Effect of Public Update		
H$_4$: PU × PF → (-) Funding Level	Supported	Supported
H$_5$: PU × NF → (+) Funding Level	Supported	Supported

Note. PF: Positive Framing, NF: Negative Framing, PU: Public Update

To further test our explanation of the moderating effects, we did an additional analysis to examine how the content of the public update impacts a positively framed campaign. Therefore, we focused on four campaigns including 1) a

positively framed campaign without an update (i.e., original campaign), 2) the same positively framed campaign followed by a neutral update, 3) the same positively framed campaign followed by a positively framed update, and 4) the same positively framed campaign followed by a negatively framed update. We compared backing intention among these four campaigns and demonstrated the results in Figure 5. As it is shown in Figure 5, the negative effect of a positively framed campaign can be decreased or even turned to a positive effect if the creator posts a neutrally/negatively framed update to the campaign. Similarly, a positively framed update decreases the positive effect of a negatively framed campaign. These findings highlight the important moderating role of the public update and its content.
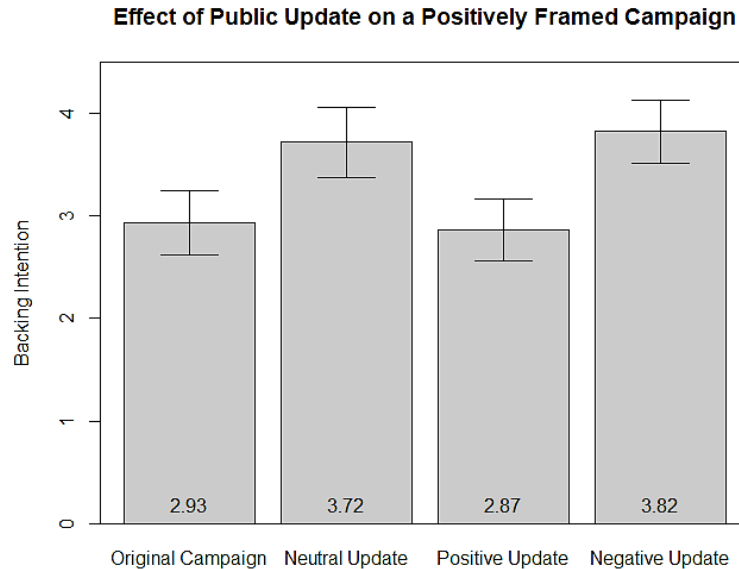

Figure 5. Effect of Public Update on a Positively Framed Campaign

5. General Discussion

Our empirical and validations studies are mainly supporting each other. Results suggest that, contrary to intuition and common practice among creators, positive framing of crowdfunding messages and product descriptions, which focuses on benefits, has no impact on encouraging potential backers to contribute. On the other hand, negative framing, which focuses on costs, has a very strong significant impact on funding level. As we discussed, according to the regulatory focus theory, negative framing can be more effective than positive framing when the level of elaboration is high and the majority of viewers are prevention focused. (e.g., Cornelis et al., 2012; Higgins et al., 2011). Especially in the crowdfunding context, potential backers are concerned about investing in new ideas and are prevention focused. Therefore, a negative framing that centers around mentioning the risks and costs can be considered more helpful than positive framing and may reduce perceived investment risk among backers.

In addition to regulatory focus theory, which explains the effects of message framing, the insignificant effect of positive framing might also be due to sending too many positive signals and intensifying the perception that creators are over-advertising the product [Kirmani, 1997]. High level of arousal, which can result from being exposed to many positive signals, can lead to a decrease in funders' performance (e.g., lower probability of contribution). Therefore, all other variables constant, when creators send multiple positive signals (i.e., many positive words through updates), funders may lose their trust in the project, and the probability of the contribution decreases. We also find a positive effect of public updates on funding level, suggesting the significant positive effect of keeping the backers updated over the project funding cycle. Regarding the moderating effects, findings indicate that public updates increase the effect of negative framing on funding level, showing the importance of negative framing while the number of updates increases. Due to uncertainties among backers when they decide whether to contribute to a project, posting an update by a creator makes potential funders trust the creator and rely more easily on other helpful existence cues in the message, such as negative framing. That is, public updates positively affect backers' intention to contribute by reducing their risk of relying solely on the message framing. However, the combination of public updates and positive framing results in a decrease in funding level, suggesting that posting more positively framed updates will create a negative perception among backers because the creators do not emphasize how their products reduce the negative effects of not using the product. More importantly, we found that the negative effect of a positively framed campaign

can be decreased by posting a neutrally/negatively framed update. This explains how a positively framed campaign can be finally successful if the creators post negatively framed updates to these campaigns.

6. Conclusion

Since it is hard to find investors for new projects, entrepreneurs try to raise money for their new ideas through online platforms from a large crowd [Belleflamme et al., 2014; Guo et al., 2017]. Thus, the popularity of crowdfunding has grown exponentially in the last few years, generating around $6.1B worldwide in 2013, $16.2B in 2014, and $34.4B in 2015 [Massolution, 2015], in support of entrepreneurial and social ventures in areas such as the arts, fashion, and technology. The World Bank estimates that crowdfunding efforts should yield approximately $90B by 2020 [Hogue 2016]. Since crowdfunding is a popular and fast-growing tool for innovators, understanding the mechanisms of this modern fundraising approach is important to innovators and entrepreneurs who need funds to implement their ideas. However, crowdfunding research is in its infancy. That is, researchers are searching for empirical regularities, which may lead to the discovery of hypotheses, laws, and theories, in an attempt to uncover patterns that may lead to further insights into crowdfunding behaviors.

In that light, we expand the crowdfunding literature and examine the effects of textual information on funding level. In particular, we focus on two new marketing signals embedded in project descriptions (i.e., positive and negative framing) to offer new predictors of the success of these projects and to show how an important signal (i.e., public update) can strengthen or weaken the effects of these new signals. The results of the empirical and laboratory studies consistently show that negative framing is preferred over positive framing as negative framing increases backing intention and funding level. Results also show that public updates are an important predictor of funding level. Moreover, we investigate the interactions between these new signals (i.e., positive and negative framing) and public updates. We find that public updates strengthen the effect of negative framing on funding level by alleviating the risk of relying on projects' descriptions. More specifically, we find that a negatively framed update strengthens the positive effect of negative framing and weakens the negative effect of positive framing on funding level. The implications of these results are explained in the following section.

6.1. Theoretical Implications

In crowdfunding projects, creators provide different information and illustrations with regard to their products to simplify the decision-making process for funders and finally to encourage them to contribute to creators' projects. Given the importance of understanding different predictors of crowdfunding success, past studies have examined these factors including 1) campaign-related factors such as backer support (e.g., Mollick & Kuppuswamy, 2014), public updates [Mollick, 2013, 2014], video presence (e.g., Kuppuswamy & Bayus, 2018), image presence (e.g., Li & Duan, 2014), creators' experience (e.g., Giudici et al., 2013), delivery timeliness, product quality, project novelty [Xu et al., 2016], funding time [Feng et al., 2015], award and creator-funder interaction [Zheng, Xie, Hou, & Li, 2014], and social media presence (e.g., Rakesh et al., 2015); 2) funder-related factors such as online trust/distrust, consumer motives, cultural similarity, and geographical proximity (e.g., Burtch et al., 2014; Chang & Fang, 2013; Gerber et al., 2012; Ryu & Kim, 2016; Zhang & Gu, 2015); and 3) creator-related factor such as creator's identity [Leung and Sharkey, 2014] and entrepreneur's social capital/network [Mollick, 2014; Zheng, Li, Wu, & Xu, 2014]. Among the campaign-related factors, entrepreneurial narratives (e.g., Allison et al., 2015; Bi et al., 2017) are very important in predicting the success of campaigns because a large portion of an online crowdfunding campaign is the project description.

Although narratives are important predictors of crowdfunding success, previous literature provides us with mixed results regarding the role of narratives in crowdfunding platforms. For example, in the crowdfunding context, Allison et al. [2015] find that positive framing, i.e., using human interest language, increases the attractiveness of a project. But Kim et al. [2016] find that negative framing results in a more favorable outcome on a crowdfunding platform. These mixed results in the crowdfunding literature emphasize the need for developing a theoretical model in the context of crowdfunding to explore the effects of message framing on funding level. In that regard, our model expands the literature and examines the effects of positive and negative framing on funding level. We contribute to the crowdfunding literature by showing how regulatory focus theory [Higgins, 1997] explains the backers' behavior on a crowdfunding campaign, and how a specific message (i.e., negative framing) is more effective than positive/neutral language in increasing funding level and the success of online campaigns. Our theoretical model also explains how an online cue (i.e., public updates) interacts with the message framings and moderates their effects on crowdfunding campaigns. This moderating effect clarifies some inconsistencies in the literature regarding the effects of positive and negative framing. Our theoretical model suggests that negative framing should be preferred over positive framing. More importantly, we propose that the negative effect of a positively framed campaign can be decreased or even turned to a positive effect if it is followed by a negatively framed update.

6.2.   Managerial Implications.

The findings present some interesting insights for entrepreneurs. Based on our studies, we recommend some suggestions to project creators. First, creators should use negative framing (i.e., use of counterfactual language to highlight the costs associated with not contributing) in their project descriptions as this framing positively impacts funding level. Second, creators should update their projects over the funding cycle because public updates make the information regarding a project's progress more transparent and motivate potential backers to contribute. Third, when creators update a project, they should post an update using counterfactual language as there is a significant interaction between public updates and negative framing, and the positive effect of negative framing will be strengthened following an update.

Fourth, creators should avoid posting a positively framed update as the combination of public updates and positive framing will negatively affect the funding level. Fifth, if a creator has already posted a positively framed campaign, it's better to post negatively framed updates afterward as these updates decrease the negative effect of positive framing on funding level. Sixth, if a creator needs to update a project but the update cannot be framed in a negative style, it is better to use neutral language in the update because, according to our experimental studies, the interaction between an update and neutral language does not adversely affect funding level. Finally, using other variables in our model, creators should 1) post a video to communicate their message, 2) add more images to better visualize their ideas, 3) answer more FAQs in the project description, 4) elaborate on the project/idea details as writing more words in project descriptions positively affects funding level, and 5) define more categories of rewards to give potential backers more options for contribution. All these variables positively affect funding level and can increase the number of backers and the chance of crowdfunding success.

Moreover, the results of the empirical analysis have other more specific implications for creators of projects. According to our estimates in Table 3, all other variables constant, 1) one unit increase in the level of negative framing (e.g., *We know that thin/long wire cables result in big voltage drops. Our product compensates for these losses as much as possible.*) increases funding level by 1.2%; 2) one unit increase in the number of updates increases funding level by 8.6%, suggesting the power of updates; 3) when a creator uses positive framing (e.g., *Our product is amazingly effective in saving energy by voltage optimization*), one unit increase in the number of updates decreases funding level by 1.4%; and 4) when a creator uses negative framing, one unit increase in the number of updates increases the positive effect of negative framing by 6.6%.

7.   Limitations and Future Research

This study has some limitations that future research can address. First, in this study, we looked at the effects of public updates, funding level, and other variables from a static standpoint (i.e., at the final point of a project lifetime). However, these variables change over a project's lifetime. Future research can explore the dynamics of these variables and their impacts over the project lifetime. Thus, we might understand at what point of a project lifetime these variables have more or less impact on funding level. Second, we designed a number of scenario-based experiments to test our model. But it might be better to study the *Kickstarter* platform through a natural experiment to increase the validity of the results. If researchers manipulate different factors on a real crowdfunding website and observe funders' reactions, the results could be more reliable. However, these limitations do not prevent organizations from learning from our results.

Third, we investigated the effects of rhetoric on the *Kickstarter* platform. Future research can investigate these effects on other similar platforms such as Indiegogo. It is important to check whether the results hold when we change the source of data. Fourth, we used data from the Gadget category on the *Kickstarter* platform. Future research can consider examining the effects of message framing on crowdfunding success in different categories to further test our proposed framework. Finally, *Kickstarter* is a reward-based platform. But there are other forms of crowdfunding platforms such as profit-sharing ones (e.g., SellaBand and Wefunder) that have different mechanisms. Future research can investigate other types of crowdfunding campaigns to compare the results from those platforms with a reward-based platform.

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