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## Empirical Study of the Effects of Information Description on Crowdfunding Success — The Perspective of Information Communication

(Full Paper)

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### ABSTRACT

From the perspective of information communication, we identify four dimensions of information description, including information quantity (word number, picture number and video number), information attitude, information quality (as measured by readability) and information update. We then empirically examine their effects on crowdfunding success using binary logistic regression. And data is collected from Kickstarter, a popular crowdfunding platform. The results reveal that word number, picture number, video number and update are positively associated with crowdfunding success. And readability is negatively associated with crowdfunding success. In addition, attitude positively moderates the relationship between picture number and crowdfunding success. These findings show the significance of information description on crowdfunding, providing theoretical and practical guidance for project creators.

*Keywords:* crowdfunding success, information description, information communication.

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### INTRODUCTION

With the rapid development of Internet, crowdfunding has become increasingly popular in recent years. Crowdfunding is a group behavior in which the public communicates through the Internet and pools funds to support activities initiated by other organizations and individuals, and it is a new financing model for microfinance through internet platform (Ordanini *et al.*, 2011). There are mainly four categories of crowdfunding. The first one is patronage-based, where supporters expect no direct return from their contributions or donations. The second one is lending-based, where the supporters expect some rate of return on their capital invested. The third one is reward-based, where supporters receive a reward for backing a project. The reward can simply be a mention/credit in a movie or a prototype (earlier version) of a product. The last one is equity-based, where the supporters are treated as investors and are given certain shares of future profit of the project (Mollick, 2014).

Today, there are approximately 1250 active crowdfunding platforms across the world (Massolution, 2015). According to Massolution, the global crowdfunding industry reached \$34.4 billion in 2015, up from \$6.1 billion in 2013; the compound annual growth rate is expected to be 26.87% for the period of 2016–2020 (Crowd Fund Beat Data Center, 2016). In a recent research report, Clifford (2016) found that the failure rate ranges from 69% (Kickstarter.com) to 87% (Indiegogo.com) among the five largest platforms (Clifford, 2016). This shows that the actual completion rate of financing is not high, the financing efficiency is low, and the financing success rate needs to be improved. Therefore, it is crucial to identify general antecedents of funding success or performance, because it can provide insights to project creators to improve the rate of crowdfunding success. From the perspective of information communication, this article explores the effects of information description on crowdfunding success, and increases the possibility of project financing to improve the financing efficiency of the crowdfunding industry and promote the healthy development of the industry.

### LITERATURE REVIEW

#### Antecedents of crowdfunding success

Crowdfunding has attracted enormous attention from scholars. And many scholars have studied the antecedents of crowdfunding success, including project information (duration, goal, industry category, reward category, investable amount, word, picture and video), creator information (creator's experience, education, government support and social relationship), support information (backers number, shares number, comments number, initial amount) and risk information (geographic distance, risk description).

Many researchers had demonstrated the vital factors during crowdfunding. Mollick (2014) offered underlying dynamics of success and failure of crowdfunding which include personal networks (Facebook friends of founders), underlying project quality (video, spelling errors, updates) and geography. The study showed that Facebook friends of founders, video and updates are all positively related to funding success, while spelling errors reduced the chance of funding success. And geography was associated with both the type of projects and successful fundraising (Mollick, 2014). Wang *et al.* (2017) paid attention to the interaction between

creators and backers. They examined effects of comment (quantity, sentiment and length) and reply (ratio, length and speed) on crowdfunding success (Wang *et al.*, 2017). Huang *et al.* (2015) analyzed the factors influencing the success of crowdfunding projects from the perspective of customer value, including product value, people value, service value, image value and monetary cost. Their study suggested that service value and image value have a significant influence on funding success, product value and people value influence it in a certain extent, while monetary cost influences it insignificantly (Huang *et al.*, 2015). What's more, Huang *et al.* (2017) examined the factors of influencing crowdfunding using Trust Theory, including project information, initiator features and uncertainty, and created neural network model to predict success or failure (Huang *et al.*, 2017). Based on previous literature, the antecedents of crowdfunding success consist of project characteristics, information description, creator characteristics, baker characteristics and risk information. Our study focuses on the aspect of information description.

**Information description and crowdfunding success**

Previous literature had examined the influence of information description on crowdfunding success from diverse perspectives. Moy *et al.* (2018) examined the effects of information quantity (word count) on crowdfunding performance and found that excess information quantity negatively affect funding outcome and number of backers (Moy *et al.*, 2018). Zhou *et al.* (2016) identified five exemplary antecedents (length, readability, tone, past experience and past expertise) from project descriptions to study the influence of project descriptions on funding success. Length, readability, and tone are related to the content of project descriptions; past experience and past expertise are related to the owner of project descriptions (Zhou *et al.*, 2016). Our study focuses on the perspective of information communication.

**MODEL AND HYPOTHESES**

**Theoretical model**

Our research model is shown in Figure 1. We consider four dimensions of information description, including information quantity, information attitude, information quality and information update, and three dimensions of information quantity, including word number, picture number and video number. And information quality includes readability. Since projects characteristics (funding goal, duration, comment) and creator characteristics (experience as creator, experience as backer) have been identified as antecedents of crowdfunding success in previous researches (Kuppuswamy and Bayus, 2014; Mollick, 2014), we treat them as control variables.

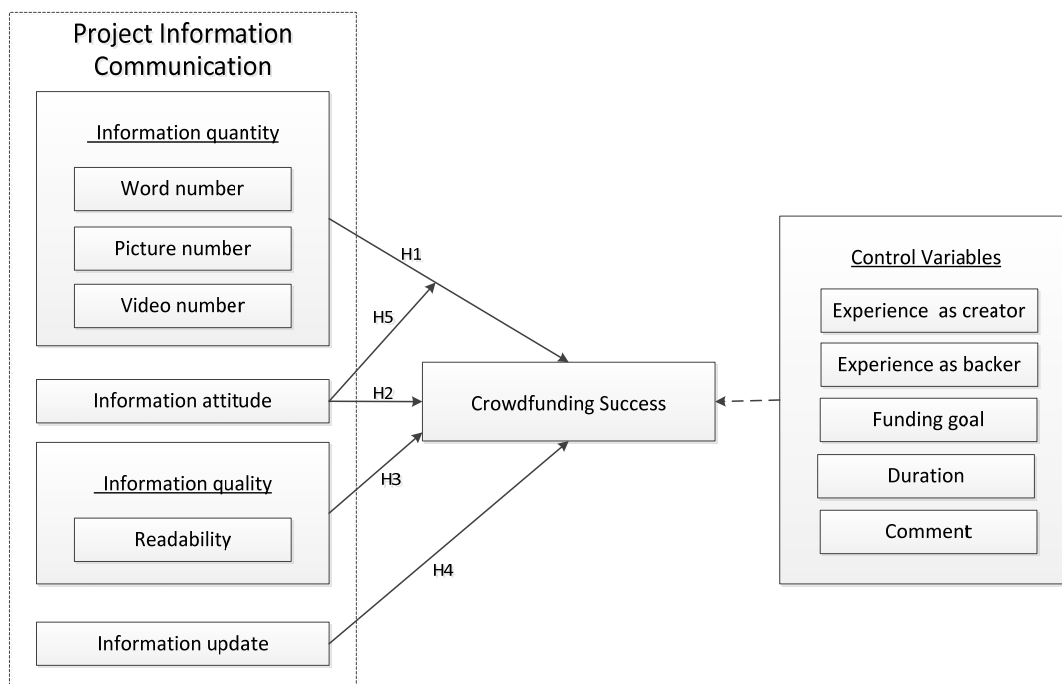


Figure 1: Theoretical model.

## Hypotheses

Based on the theoretical model, we make the following assumptions including four dimensions of information description. They are information quantity, information attitude, information quality and information update.

### *Information quantity*

Moy *et al.* (2018) revealed that the amount of word has a positive effect on the crowdfunding success. Increasing the word number within the range of optimal number of word is beneficial to crowdfunding. And Zhou *et al.* (2016) also proved that the amount of information measured by the number of words is positively associated with funding success. Thus, the more word number within optimal quantity will describe the project in more detail, which can make bakers more understand the project information. We propose:

- Hypothesis 1a (The Word number Hypothesis): The word number of project description is positively associated with crowdfunding success.

Huang *et al.* (2015) analyzed the factors of crowdfunding success using Customer Value Theory, whose study showed that image number in project introduction influence the crowdfunding success positively (Huang *et al.*, 2015). Many empirical studies also have found that the picture in description is associated with crowdfunding success (Frydrych *et al.*, 2014; Beier and Wagner, 2015). Thus, we propose:

- Hypothesis 1b (The Picture number Hypothesis): The picture number of project description is positively associated with crowdfunding success.

Mollick (2014) revealed that video in the project description is related to crowdfunding success. And video has positive effects on success (Mollick, 2014). And there are many empirical studies that revealed the use of video in description is associated with crowdfunding success (Frydrych *et al.*, 2014; Beier and Wagner, 2015; Mollick, 2014). Thus, we propose:

- Hypothesis 1c (The Video number Hypothesis): The video number of project description is positively associated with crowdfunding success.

### *Information attitude*

In this study, attitude is the meaning of risks. The risky content in project description may increase perceived risk of bakers. And previous literature have proved that perceived risk has negative effects on intention to purchase (Pelaez *et al.*, 2019; Park *et al.*, 2005). Based on these, we make the hypothesis 2.

- Hypothesis 2 (The Information attitude Hypothesis): The information attitude of project description is negatively associated with crowdfunding success.

### *Information quality*

Readability variable has been used in previous studies. Readability means that the understanding of text is easy, which is measured by the Gunning Fog Index (Li, 2008; Zhou *et al.*, 2016). Thus, with the ease of understanding information, backers will have a greater possibility to support the project. Therefore, we make the hypothesis 3.

- Hypothesis 3 (The Readability Hypothesis): The readability of project description is positively associated with crowdfunding success.

### *Information update*

Mollick (2014) demonstrated that frequent update during funding has positive influence on success. Kuppuswamy and Bayus (2013) also revealed that update is positively and significantly related to crowdfunding success (Kuppuswamy & Bayus, 2013). Frequent update can present the development of project timely, which can make bakers support it. Following these, we propose:

- Hypothesis 4 (The Information update Hypothesis): The update number of project description is positively associated with crowdfunding success.

### *Information quantity × Information attitude*

- Hypothesis 5a (The Word number and Attitude Hypothesis): The information attitude positively moderates the relationship between the word number and crowdfunding success.

- Hypothesis 5b (The Picture number and Attitude Hypothesis): The information attitude positively moderates the relationship between the picture number and crowdfunding success.
- Hypothesis 5c (The Video number and Attitude Hypothesis): The information attitude positively moderates the relationship between the video number and crowdfunding success.

### Mathematical model

To test if the hypotheses are true, we use the following mathematical model:

$$\begin{aligned} \text{Crowdfunding Success} = & \beta_0 + \beta_1 * \text{word\_num} + \beta_2 * \text{picture\_num} + \beta_3 * \text{video\_num} + \beta_4 * \text{attitude} + \beta_5 * \text{readability} \\ & + \beta_6 * \text{update} + \beta_7 * \text{experience\_creator} + \beta_8 * \text{experience\_backer} + \beta_9 * \text{goal} \\ & + \beta_{10} * \text{duration} + \beta_{11} * \text{comment} + \varepsilon \end{aligned} \quad (1)$$

### MEASURE

In the mathematical model, crowdfunding success is dependent variable which takes a value of either 1 or 0. If the project is funded successfully, the value of success is 1, otherwise it is 0. And we measure word\_num, picture\_num and video\_num using the number of total word, total picture and total video in project description respectively. Attitude represents creator's awareness for risks and challenges of project. So we measure attitude using the ratio of risky and challenging words in the total number of words. Information attitude is calculated as follows:

$$\text{Attitude} = \frac{\text{risky and challenging words}}{\text{total words}} \quad (2)$$

We measure information quality by using the ease of understanding (readability). Following the previous literature, we use the Gunning Fog Index to measure the readability of information description (Li, 2008; Zhou, 2016). The Gunning Fog Index was developed by Robert Gunning in 1952 and the Gunning Fog Index is calculated with the following algorithm (Gunning fog index, 2015):

$$\text{The Gunning Fog Index} = 0.4 \left[ \left( \frac{\text{words}}{\text{sentences}} \right) + 100 \left( \frac{\text{complex words}}{\text{words}} \right) \right] \quad (3)$$

The higher the fog index, the lower the readability. So readability uses the reciprocal of Fog Index.

$$\text{Readability} = \frac{1}{0.4 \left[ \left( \frac{\text{words}}{\text{sentences}} \right) + 100 \left( \frac{\text{complex words}}{\text{words}} \right) \right]} \quad (4)$$

Since the update is not related to funding after ended time, we measure information update using the number of update between the launched time and ended time of project. Furthermore, we measure the comment variable using the number of comment about project. All variables and their measures are shown in Table 1.

### DATA COLLECTION

The data of this study were collected from Kickstarter using Python, and part of data were collected manually. Kickstarter is one of most popular and largest crowdfunding websites in the world. It was launched in 2009 and it has more than fifteen million backers, and about five million of them are repeat backers. At present, more than 148, 000 projects have been successfully funded, and more than four billion dollars have been raised (Kickstarter, 2018). What's more, the majority of research on crowdfunding use Kickstarter data. Therefore, we also choose data from Kickstarter website. This can make comparison between our results and previous researches, and make our results more reliable and meaningful.

We collected the latest projects data spanning from January 2018 to August 2018. We excluded projects that were ongoing at the date of the data collection. And we removed canceled projects and suspended projects from them. What's more, we also removed projects with goal less than 100 dollars or more than 1, 000, 000 dollars to reduce the error of analysis. The resulting dataset contains 922 projects across all fifteen funding categories, of which 633 projects were funded successfully (achieving 100% or more of the goal), whereas 289 projects were funded unsuccessfully (achieving less than 100% of the goal).

Table 1: Variables and their Measures

Variables	Measures
<b>Dependent Variable</b>	
Crowdfunding Success	The value of successful funding is 1, otherwise it is 0
<b>Independent Variables</b>	
word_num	Number of word in project description before the project starts
picture_num	Number of picture in project description before the project starts
video_num	Number of video in project description before the project starts
attitude	Ratio of risky and challenging words in project description
readability	The reciprocal of Gunning Fog Index
update	Number of update between launched time and ended time of project crowdfunding
<b>Control Variables</b>	
experience_creator	Number of projects initiated by the creator
experience_backer	Number of projects backed by the creator
goal	Target amount of funding
duration	Number of days during fundraising
comment	Number of comments about project

## RESULTS

### Descriptive statistical analysis

The results of descriptive statistical analysis are showed in Table 2, listing the minima, maxima, means, standard deviations and variances.

Table 2: Descriptive statistical analysis results

Variables	Min	Max	Mean	SD	Variance
Success	0	1	0.69	0.464	0.215
duration	0	60	31.93	12.316	151.690
goal	100	400000	10162.10	27205.164	740120968.328
word_num	12	4172	716.29	589.310	347285.748
picture_num	0	155	7.88	13.052	170.365
video_num	1	7	1.13	.528	0.279
attitude	0	0.9483568080	0.192657795661	0.1330136250789	0.018
commnet	0	838	13.37	64.654	4180.193
readability	0.0183940870	0.0946818610	0.054420552671	0.0096900481215	0.000
update	0	50	3.45	4.920	24.206
experience_creator	1	49	2.34	3.808	14.501
experience_backer	0	334	9.11	28.358	804.168

### Multicollinearity analysis

To reduce kurtosis and skewness, we used the logarithm values of goal and word\_num. Table 3 shows the correlated relationships among variables. The correlation coefficients are all between -0.395 and 0.501. The correlated relationship is not high. In addition, Table 4 shows that the value of VIF for each independent variable is smaller than 2 and far less than 10. So there is no multicollinearity problem between variables.

Table 3: Correlation analysis results

Correlation												
Variable	Success	duration	goal	word_num	picture_num	video_num	attitude	commnet	readability	update	experience_creator	experience_backer
Success	1	-.103**	-.060	.201**	.186**	.048	-.173**	.136**	-.071*	.310**	.172**	.176**
duration		1	.070*	-.001	-.030	.012	.027	-.012	-.031	.024	-.167**	-.102**

goal	1	.156**	.129**	.055	-.069*	.301**	.024	.162**	-.010	.007
word_num		1	.501**	.191**	-.395**	.213**	-.084*	.398**	.198**	.236**
picture_num			1	.194**	-.193**	.324**	.022	.400**	.211**	.207**
video_num				1	-.068*	.062	.002	.211**	-.008	.067*
attitude					1	-.052	.021	-.139**	-.117**	-.125**
commnet						1	-.005	.302**	.115**	.263**
readability							1	.004	.108**	.028
update								1	.133**	.225**
experience_creator									1	.286**
experience_backer										1

\*\* Significantly related at 0.01 level (both sides).

\* Significantly related at 0.05 level (both sides).

Table 4: Multicollinearity analysis results

Variable	Multicollinearity statistic	
	Tolerance	VIF
duration	0.941	1.063
goal (log)	0.784	1.275
word_num (log)	0.523	1.913
picture_num	0.693	1.442
video_num	0.950	1.052
attitude	0.762	1.313
commnet	0.797	1.255
readability	0.943	1.061
update	0.752	1.330
experience_creator	0.842	1.187
experience_backer	0.826	1.210

Dependent: Success

**Binary logistic regression analysis**

Since the dependent variable (Crowdfunding Success) is dichotomous variable which takes a value of either 1 or 0, we test the hypotheses using the binary logistic regression. We establish three models. Model A consists of the control variables and the dependent variable. We add the independent variables to Model B. Furthermore, we add moderator to Model C including all variables. The analysis results are presented in Table 5.

Table 5: Binary logistic regression analysis results

Variables	Success		
	Model A	Model B	Model C
intercept	1.836** (.001)	1.829 (.108)	.576 (.712)
<i>Controls</i>			
goal (log)	-.496** (.001)	-.844** (.000)	-.880** (.000)
duration	-.008* (.028)	-.008 (.217)	-.007 (.291)
experience_creator	.186** (.006)	.194** (.007)	.188** (.009)
experience_backer	.032* (.032)	.011 (.011)	.011 (.011)

	(. 023)	(. 369)	(. 391)
comment	. 364**	. 279**	. 257**
	(. 000)	(. 000)	(. 000)
<i>Main effects</i>			
word num (log)		. 944**	1. 522**
		(. 004)	(. 005)
picture num		. 021*	. 055**
		(. 043)	(. 003)
video num		. 112*	. 073*
		(. 046)	(. 036)
attitude		-1. 511*	5. 861
		(. 030)	(. 265)
readability		-18. 455*	-19. 568*
		(. 036)	(. 028)
update		. 188**	. 199**
		(. 000)	(. 000)
<i>Moderating effects</i>			
word num (log)*attitude			-2. 935
			(. 119)
picture num*attitude			. 252*
			(. 034)
video num*attitude			-0. 702
			(. 783)
<i>Model summary</i>			
-2 Log likelihood	920. 178	850. 603	841. 43
Cox & Snell R2	0. 216	0. 273	0. 281
Nagelkerke R2	0. 303	0. 384	0. 394
**p<. 01			
*p<. 05			

As shown in Model A, the goal (-0. 496, p=0. 001), the duration (-0. 008, p=0. 028), the experience as creator (0. 186, p=0. 006), the experience as backer (0. 032, p=0. 023) and the comment (0. 364, p=0. 000) are significantly associated with crowdfunding success. In Model B, we add word number, picture number, video number, attitude, readability and update to investigate the effects of information description on crowdfunding success. The results shows that these variables are also significantly associated with crowdfunding success.

In Model C, we add the moderator to test all of the hypotheses. As shown in Table 5, the word number (1. 522, p=0. 005), the picture number (0. 055, p=0. 003), the video number (0. 073, p=0. 036) and update (0. 199, p=0. 000) are all positively related to crowdfunding success, supporting the Hypothesis 1a, Hypothesis 1b, Hypothesis 1c and Hypothesis 4, respectively. But attitude (5. 861, p=0. 265) is not related to crowdfunding success, so the Hypothesis 2 is not supported. What's more, we find that readability (-19. 568, p=0. 028) is negatively related to crowdfunding success. This is confusing because we expect a positive relation. Since the information description of project is more readable, it is easier for backers to understand. Being easy to understand means the information description of project mainly consists of informal or easy words with low Fog Index. Using the formal words (with high Fog Index) to write information description may represent the professionalism of project creator (Chen *et al.*, 2009). So backers have positive perception for the project and it increases the possibility of crowdfunding success. Therefore, the Hypothesis 3 is not supported.

The moderator in Model C indicates that attitude (0. 252, p=-0. 034) positively moderates the relationship between picture number and crowdfunding success, supporting the Hypothesis 5b. This means that attitude of information description enhance the effect of picture number on crowdfunding success. However, attitude (-2. 935, p=0. 119) has no effect on the relationship between word number and crowdfunding success, and attitude (-0. 702, 0. 783) also has no effect on the relationship between video number and crowdfunding success. Therefore, the Hypothesis 5a and Hypothesis 5c are not supported. The results of all hypotheses testing are summarized in Table 6.



Table 6: Hypotheses testing results

Hypotheses		Results
H1a	The word number of project description is positively associated with crowdfunding success.	Support
H1b	The picture number of project description is positively associated with crowdfunding success.	Support
H1c	The video number of project description is positively associated with crowdfunding success.	Support
H2	The information attitude of project description is negatively associated with crowdfunding success.	Not Support
H3	The readability of project description is positively associated with crowdfunding success.	Not Support negatively
H4	The update number of project description is positively associated with crowdfunding success.	Support
H5a	The information attitude positively moderates the relationship between the word number and crowdfunding success.	Not Support
H5b	The information attitude positively moderates the relationship between the picture number and crowdfunding success.	Support
H5c	The information attitude positively moderates the relationship between the video number and crowdfunding success.	Not Support

### CONCLUSION AND DISCUSSION

To assess the impacts of information description on crowdfunding success, we consider four aspects of information description including information quantity, information attitude, information quality and information update based on the perspective of information communication. We measure information quantity as the word number, picture number and video number. And we measure information quality as the readability. Using these variables, we are able to make hypotheses between information description and crowdfunding success. And we collect data from Kickstarter website to test the hypotheses. Our results indicate that the number of word, picture and video in project description are all positively associated with crowdfunding success. Moreover, the number of update is positively associated with crowdfunding success. However, the readability is negatively associated with crowdfunding success. Because low readability means the professionalism of the creator. And information attitude have no effects on crowdfunding success. What's more, we also find that information attitude positively moderates the relationship between the picture number and crowdfunding success. But it doesn't moderate the relationship between the word number or the video number and crowdfunding success.

This research makes two contributions to the crowdfunding research. On one hand, this study systematically investigates the influence of information description on crowdfunding. Previous studies only tested influence of the number of word in description. On the other hand, the results of this study emphasize the importance of information description and make project creators understand the effects of antecedents to increase the possibility of crowdfunding success.

Nevertheless, our research has also some limitations and it can provide opportunities for future research. Firstly, our data were collected from only one crowdfunding platform (Kickstarter). But there are other crowdfunding platforms, such as Gofundme and IndieGoGo. This limits the universality of our research results. Secondly, our study focuses on the information description of project before the project starts. The information description during updating has also effects on crowdfunding success. Thirdly, we can't control the personal characteristics of backers, such as age, sex or category interests, which may also affect their decisions. In the future, the research can be extended from the above aspects.

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