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Research on Influence Factors of Crowdfunding

YAO Huili^[a]; ZHANG Yaodong^{[b],*}

^[a]School of Economics and Management, Jiangsu University of Science and Technology, Zhenjiang, Jiangsu, China. Professor, Ph.D., Research direction is e-commerce.

^[b]School of Economics and Management, Jiangsu University of Science and Technology, Zhenjiang, Jiangsu, China.

*Corresponding author.

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Abstract

Crowdfunding—as a booming innovative internet-based financial model is one of the solution to SMEs and entrepreneurs to develop new products in a difficult financing situation. Factors were extracted by studying the process of crowdfunding, combined with relevant literature. Applying the method of optimal scaling regression, this paper researched into the influential factors affecting crowdfunding project financing, based on a survey about 314 projects funded in crowdfunding website in 2013. It was found out that the economic, customer participation, trust, information quality and social network have positive effects on crowdfunding project financing, customer participation making the most influence. Corresponding conclusions and suggestions were put forward to help financing individuals or groups to improve their performance in crowdfunding.

Key words: Crowdfunding; Financing; Optimal scaling; Influence factors; Customer participation

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INTRODUCTION

Crowdfunding is derived from the concept of crowdsourcing and micro-finance, referring to the financing directly through the Internet platform, to a wide number of investors. Each investor provides a relatively small amount financial support, acquiring physical product or equity in return as Mollick (2014) noted. This model originated in 2009, developing rapidly in European and American countries. According to Massolution Company's research report (2013), in 2012 global crowdfunding financing had reached \$ 2.7 billion, successfully supported more than 1 million projects. It's expected to be 81 percent of total growth, climbing to \$ 5.1 billion. Chinese first crowdfunding website “Dian Ming Shi Jian” was born in 2011, developing quickly. As an innovative booming business model, crowdfunding is one of the solutions to the problem of financing difficulties for SMEs and entrepreneurs.

For enterprises and crowdfunding websites, the priority goal is to raise as much money as they can to support projects so that they can make a good profit. Therefore, based on the data of 314 public projects collected in Chinese crowdfunding platform “Dian Ming Shi Jian” in 2013, the paper studied influence factors of the success of crowdfunding through optimal scaling regression. On the one hand, this study help the entrepreneurs and product development teams to initiate projects more effectively, improving the success rate, on the other hand, help guide crowdfunding websites to select right project and improve the website income.

1. THEORY AND HYPOTHESES

As shown in Figure 1, when consumers participate in the crowdfunding, they can get information via the website.

Funders can click a preset quota button, completing online payment, different investment corresponding to different return. Within the stipulated time, the project win a successful crowdfunding if the total amount reaches or exceeds a predetermined target, otherwise the project fails and consumers will get the funds return. In this process, the project description constitutes the initial basic appeal to consumers. Crowdfunding website generally provides the following information: introduction about project financiers, product function and features, project progress, return and discussion between project funders and financiers, reflecting economy, customer participation, trust, information quality and social network related to the project. These factors have important effect on consumer’s decision and behavior.

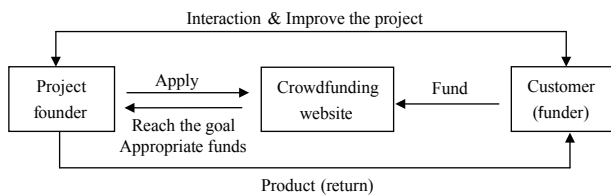


Figure 1
Operation Framework of Crowdfunding

1.1 Economy

Economy is consumer’s perception of expense saving during the process of crowdfunding. Consumers must pay cost, especially the financial cost participating in the crowdfunding. Because of legal restrictions, way of equity return is strictly limited. Instead, project founders usually give funders future products or souvenirs whose future market price is higher than the customer’s financial support, in order to attract funders.

Rubinstein’s study (2002) shows that the main factor influencing online shopping is the price. Price discount is the main force attracting consumer’s online shopping. During the process of crowdfunding, a large number of consumers purchase in advance so that producers get orders and customer information before commercial production. Their R&D efficiency can be improved, risk and cost reduced. So the project founders are willing to give supporters a favorable discount. Economy, as an important factor affecting consumer behavior of crowdfunding, is mainly reflected in the measures of price concessions.

Based on the above analysis, we take the discount information mentioned in project description as economic indicator. Clear discounts stimulate consumers to participate in the crowdfunding and have a positive effect on the financing amount. Give the following hypothesis:

H1: Clear discount information has a positive impact on the amount of financing.

1.2 Customer Participation

During the process of crowdfunding, consumers can interact with product developers through message boards to keep track of the progress of new product development, put forward their own proposals and questions, etc.

According to existing research, consumer’s participation in product development can enhance consumer’s purchase intention. Bendapudi and Leone (2003) and other scholars have pointed out, the customer have strong faith and preference in products if they are involved in the design and development. Customer participation is the main feature of crowdfunding. Because of dual role as consumer and investor, customer’s willingness to participate in product innovation is very strong.

Based on the above analysis, we take the number of topics in each project’s message board as the indicator of customer participation. Large number of topics means high degree of customer participation and inspires enthusiasm of taking part in the crowdfunding. Give the following hypothesis:

H2: The number of discussion topics is positive correlated with the amount of financing.

1.3 Ability-Based Trust

Trust is an especially important factor under conditions of uncertainty and risk. Donna, Thomas and Marcos (1999) identified the building of trust as a fundamental and yet unresolved issue in the development of internet shopping.

Jarvenpaa, Tractinsky and Vitale (2000) demonstrated that trust has direct impact on the customer purchase intention. Compared to reality, network environment brought more uncertainty. This problem is particularly serious in crowdfunding because consumers are not sure whether the project can be completed as planned.

Schlosser, White and Lloyd (2006) pointed out that ability-based trust is an important dimension of trust, which refers to consumers believing that the site has the ability to provide safe, convenient, valuable trade. In the context of crowdfunding, ability-based trust means that consumers believe that the project founder has the ability to complete the project and achieve the desired results. This is mainly associated with the identity and relevant successful experience of project initiator. The identity include individual, small group and corporate. Compared with small group and individual, corporate is superior in the ability to operate and protect transaction security. Project founder’s relevant experience is also an important reference for consumers. Awards, attracting media coverage or having had successful experiences can enhance consumer confidence in founder’s project development capabilities.

Based on the above analysis, we take project founder’s identity and relevant experience as the ability-based trust index. Give the following hypothesis:

H3: Project founder’s community identity has a positive impact on the amount of financing compared with individual.

H4: Relevant successful experience has a positive impact on the amount of financing.

1.4 Information Quality

Information quality refers to the timeliness, accuracy and completeness of commodity-related information provided

by the website. According to the study of Park and Kim (2003), perceived quality of the information affects consumer's information satisfaction, and has significant impact on consumer's purchasing decision.

In the process of crowdfunding, project founder transfers project information to potential supporters via video, picture, text and so on. Among those medium, video has advantages of large information capacity, vivid image and better user experience. Project founder can provide richer product and team information through video, so as to improve the quality of information items. As the proposal raised by America's largest crowdfunding website Kickstarter, "video is a very important part of showing your project. Skipping this step has a negative impact on the project".

Based on the above analysis, this paper takes whether the project adding video information as the indicator of information quality. Information quality of project with video is higher than those without. Give the following hypothesis:

H5: Project founders adding video information on the interface has a positive impact on the amount of financing.

Social Network. Social network is made up of formal and informal links between main actors and other actors in social circle. Emirbayer and Goodwin (1994) noted that Network is considered to be series of socialites or social relations linking actors. In venture capital financing activities, a prominent phenomenon is that start-up fund mainly comes from entrepreneur's existing social network members.

Due to the e-commerce environment in crowdfunding, the number of founder's micro-blog fans is a suitable indicator to evaluate their social networks. Each project founder's personal introduction will link their personal micro-blog. It's an important platform to publicize and promote their projects.

Based on the above analysis, we take the number of founder's micro-blog fans as an indicator of the size of the social network. If the number is large, it means he or she has a large social network and there is a high probability to get much financial support. Give the following hypothesis:

H6. The number of founder's micro-blog fans is positive correlated with and the amount of financing.

2. DATA DESCRIPTION

2.1 Data Source

Date of the empirical research was extracted from Chinese largest crowdfunding website—named Dian Ming Shi Jian (www.demohour.com). In 2013, a total of 331 projects were started including 147 projects (44.4%) succeeded by achieving their goal and 184 projects failed. 17 projects were eliminated because of the lack of key data, so ultimately 314 groups of effective project data were valid. In the eyes of industry type, 158 projects (50.3%) belong to electronic technology and creative design category, reported a higher success rate (50.6%); 97 projects (30.9%) belong to music, film, animation, books, photography, 41.2% success rate.

2.2 Variable Description

Each project's amount of financing is dependent variable, as the indicator of consumer's crowdfunding behavior. The number of topics can be obtained directly from the project page. The number of fans can be obtained from each founder's micro-blog. If there is video in project description, the variable "video" is 1, otherwise 0. If project description contains "reported by the media", "winning award" or having successful experience of similar projects, the variable successful experience is noted 1, otherwise 0. About variable identity of founder, company is noted 3, groups (non-registered company) 2 and individual noted 1. About variable discount, if there is clear discount information in the project show, note 2. If there is only fuzzy information, such as "below-market price" or "super discount price" note 1. If there isn't relevant discount information, note 0.

3. INFLUENCE FACTORS ANALYSIS BASED ON OPTIMAL SCALING REGRESSION

3.1 Optimal Scaling Regression

In this paper, the empirical analysis was based on the data of survey. Some of the date was categorical date. Optimal scaling regression has significant advantage in processing categorical date.

The idea behind optimal scaling is to assign numerical quantifications to the categories of each variable, thus allowing standard procedures to be used to obtain a solution on the quantified variables. The optimal scale values are assigned to categories of each variable based on the optimizing criterion of the procedure in use. Unlike the original labels of the nominal or ordinal variables in the analysis, these scale values have metric properties. In most categories procedures, the optimal quantification for each scaled variable is obtained through an iterative method called alternating least squares in which, after the current quantifications are used to find a solution, the quantifications are updated using that solution. The updated quantifications are then used to find a new solution, which is used to update the quantifications, and so on, until some criterion is reached that signals the process to stop. In this paper we use SPSS18.0 to achieve this process.

3.2 Model Construction

Table 1 is the model abstract of the empirical analysis. $R^2 = 0.534$, adjusted $R^2 = 0.466$. It means 46.6% of the variation is explained by the regression model. The F test result in Table 2 shows that the model which has been established is efficacious.

Table 1
Model Abstract

Multiple R	R Square	Adjusted R Square
0.734	0.538	0.529

Table 2
ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	168.983	6	28.164	59.623	0.000
Residual	145.017	307	0.472		
Total	314.000	313			

Table 3 shows standardized coefficients and significant test. Under $\alpha = 5\%$ significance level, topics, identity, successful experience, video are significant. Under $\alpha = 1\%$ significance level, discount is significant. All the hypotheses are supported by the empirical result. Tolerance figure shows collinearity isn't obvious in the model. The result of optimal scaling regression is

satisfactory. The model is:

$$F = 0.099*X1 + 0.543*X2 + 0.096*X3 + 0.161*X4 + 0.100*X5 + 0.139*X6$$

F-the amount of financing, X1-discount, X2-topics, X3-identity, X4-successful experience, X5-video, X6-micro-blog fans.

Table 3
Coefficient and Test

Variable	Factor	Standardized coefficients		df	F	Sig.
		Beta	Std. Error			
Discount (X1)	Economic	0.099	0.055	1	3.290	0.071
Topics (X2)	Participation	0.543	0.042	1	164.882	0.000
Identity (X3)	Trust	0.096	0.045	1	4.561	0.033
Experience (X4)	Trust	0.161	0.042	1	14.930	0.000
Video (X5)	Information quality	0.100	0.042	1	5.723	0.017
Micro-blog fans (X6)	Social network	0.139	0.040	1	12.119	0.001

Table 4
Correlations and Tolerance

Variable	Factor	Correlations			Importance	Tolerance	
		Zero-order	Partial	Part		After transformation	Before transformation
Discount (X1)	Economic	0.431	0.122	0.083	0.079	0.708	0.654
Topic (X2)	Participation	0.661	0.564	0.464	0.667	0.730	0.711
Identity (X3)	Trust	0.252	0.131	0.090	0.045	0.866	0.799
Experience (X4)	Trust	0.308	0.220	0.153	0.092	0.909	0.907
Video (X5)	Information quality	0.306	0.135	0.093	0.057	0.861	0.878
Micro-blog fans (X6)	Social network	0.233	0.195	0.135	0.060	0.948	0.947

CONCLUSIONS

Table 4 shows further analysis. Importance index was got by calculating the importance level of independent variables in the model. All the importance index of variables adds up to 100%. The larger the index was, the more crucial the variable was to the prediction of the dependent variable. The results show that the various factors have different affect to the financing:

Customer participation. Topic number (I2 = 0.667) shows that customer participation is the most important factors. It shows that in the process of crowdfunding, consumers has strong willingness to participate in projects which they can track the progress, provide advice and directly interact with the founder. Therefore, the project founder should announce the progress of the project timely and actively interact with potential supporters

to attract and encourage consumers to participate in the planning of the project. It's significant to improve the project funding.

Ability-based trust. Successful experience (I4 = 0.092) showed important impact on the crowdfunding. Crowdfunding projects have some risks and its products have not been market tested. In this case, founder having successful experience can improve consumer confidence and helps to get support. This indicator can be used for project selection by crowdfunding website. Initiator identity (I3 = 0.045) also has influence on crowdfunding result. Customers show more confidence on business groups compared individuals.

Economy. Discounts (I1 = 0.079) play an important role in crowdfunding but not the most important factor. This may be due to the following two reasons. First, most crowdfunding products belong to the new products. Future market price referred to in project description is not authoritative and comparable. Second, innovation is the major feature of crowdfunding projects. Consumer price sensitivity of such products is low, especially those pioneer consumers, the main group of funders of crowdfunding projects. They are willing to pay a higher price to be the first to enjoy the latest products. Therefore, on the one hand, founders should promote project innovation. On the other hand, in the project description, discounts or cash benefit should be clear and comparable to products on the market.

Social networks. The number of fans (I6 = 0.060) was used to measure founder's social network. The result shows those who are powerful in some areas and have many followers are easier to get financing support. This phenomenon is particularly prominent in design and art projects. This conclusion provides direction for crowdfunding website to find quality projects.

Information quality. Adding video (I5 = 0.057) improves the information quality of the project and has a positive

impact on the crowdfunding. The site should encourage founders upload videos, such as video of product display or team show to help potential supporters get the whole picture of the project improving consumer information satisfaction.

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