The Key Factors of Successful Internet Crowdfunding Projects – An Empirical Study Based on Different Platforms

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***Abstract*—Crowdfunding, as a new conception in fundraising, provides access to get fund in the background of Internet. This paper has conducted a research on the key factors to highly successful crowdfunding based on two biggest crowdfunding platforms in China – JingDong crowdfunding platform and TaoBao crowdfunding platform. By using Logistic regression model, we find that different platform designs and different mechanisms have effect on the project success. Meanwhile, quality signals that the founders show and their own experience do have a positive association with high success of projects. Other factors that are visible directly on crowdfunding website are also been discussed.**

Keywords—crowdfunding, JingDong platform, TaoBao platform, Logistic model

I. INTRODUCTION

The concept of crowdfunding comes from crowd-sourcing. It means that customers play the role of investors which involves promoting the product they decide to invest in and sharing the risks involved (Ordanini, 2009). From the founders' point of view, Mollick (2014) points out that crowdfunding allows founders of for-profit, artistic, and cultural ventures to fund their efforts by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries. There are also platforms as another participants in crowdfunding campaigns, which work as the intermediate that demonstrates various projects.

A widely used classification method for crowdfunding is proposed by Massolution (2012), which divides crowdfunding into four types – equity-based, lending-based, reward-based and donation-based. Hereby we focus on the reward-based crowdfunding, the most well-known crowd-funding type allowing backers to gain tangible rewards.

We choose reward-based crowdfunding mainly because that this type embraces a great development in recent years. Backers involve in this type on account of their interests towards the returned products. Hence, many operation management problems need to be considered. These problems are closely related to the founders' decisions, but they are not yet supported by a complete quantitative research work.

Generally, previous studies on the success factors of crowdfunding differ in the perspective of studies and the dimension of objects. Previous studies focus on the mechanisms, risks and the success factors of crowdfunding. In this paper, we put emphasis on the financial results of reward-based crowdfunding projects, and explore the key factors of successful crowdfunding projects from the founders' perspective. Besides, we compare the two largest crowdfunding platforms in China – JingDong (JD in short) crowdfunding platform and TaoBao (TB in short) crowdfunding platform. The results show that different mechanisms have effect on the success level. In addition, quality signal variables such as Goal, Like, Follow and Video and popularity variables have relations with the success level. Thus, founders can set the projects' parameters appropriately to attract as more backers as possible, and achieve their goals of their projects.

The rest of our paper is organized as follow: In the following section, we review existing literature about crowdfunding. In Section 3, we exhibit our data processing procedures and define variables. We apply Logistic regression model to analyze crowdfunding determinants in Section 4. In the last section, we draw some conclusions and look to future studies.

II. LITERATURE REVIEW

A. Crowdfunding Classification

In existing studies, different scholars offer a variety of classification of crowdfunding based on different perspectives. Lambert and Schwienbacher (2010) suggest the classification that divides crowdfunding projects into three categories – the donate form, negative investment and active investment – in the empirical researches on crowdfunding projects. The donation form refers to that the investors will not get any form of return; the active investment means backers give advice for some decisions and participate in the operation of the project, while the negative investment is just on contrast. This

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classification stands in the perspective of backers, and the division accuracy is low. Hemer (2011) raises a seven-type classification, which involves donation, sponsorship, booking, membership fee, credit, loans, and profit sharing. Under this classification, the ownership boundary of the project is uneasy to confirm, while so many types cause difficult understanding.

With the diversity of crowdfunding projects and the growing abundance of participants, too simple or too complex divisions are not conductive to make a study. The most commonly used classification method currently is presented by Massolution (2012). Based on the different type of reward that backers can get, it divides crowdfunding into Equity-based, Lending-based, Reward-based, and Donation-based. This paper uses the classification method proposed by Massolution.

B. AON & KIA

At present, the commonly used operating mechanisms in crowdfunding are AON (All-Or-Nothing) and KIA (Keep-It-All). Cumming et al. (2014) explain the AON mechanism: A fundraising project needs to set a fundraising goal. The founder can only obtain the financing when the financing reaches the preset target, otherwise the funds raised will be returned to the backers. Kickstarter, established in the United States, uses only the AON mechanism. Kickstarter rules that if the financing target is achieved within the funding period, the sponsor can withdraw funds and pay 5% of the funds as the service fee to Kickstarter at the same time. The fee is used to pay for the Amazon payment system used by the platform. In China, JD crowdfunding platform which focuses on the reward-based crowdfunding projects also adopts the AON mechanism.

Unlike the AON mechanism, projects under the KIA mechanism can obtain fundraising whether or not they reach the target fundraising amount. Projects that do not meet the target are considered to be unsuccessful, but the funds that have been raised will not be returned to backers. Backers can't get the expected return either (Marwell, 2015). Another crowdfunding website in China, TB Crowdfunding, adopts another mechanism that combines AON and KIA mechanisms. For different projects, the founders can set the sunk cost ratio β of investment (values between 0 and 1). If the project fails, backers can only recover $(1-\beta)$ of the amount of investment. AON mechanism is considered to protect the interests of backers, and the project success rate is high but the total funding is relatively low compared with the KIA model; KIA model protects founders' interest, so it has a low project success rate, but once the project succeed, a high financing will be made.

Nowadays, there is few literature on different mechanisms in the field of crowdfunding, but some results have been achieved. Kim, et al. (2015) compare the success rate of projects and the quality of successful projects used different crowdfunding mechanism, and find that when the investment is not protected enough (KIA), backers are more careful of invest amount, while AON is prone to cluster effect.

C. Factors Affecting Success

Scholars have done a lot of works on the factors affecting the success of projects. Mollick (2014) investigates the factors including goal, financing rate, backers, comments, videos, etc., based on the Kickstarter platform. These factors become the basis of the studies afterwards. Frydrych et al. (2014) find that shorter fundraising time and modest goals are more conductive to project success, while rich project presentations and frequent updates of media use of project information can increase the success rate of financing. Ward and Racrmchandrant (2017) are the first to discuss the effect of platform information integration. Results show that backers are affected by the strategy of information integration. Besides, Kuppuswamy and Bayus (2017) find that the attention effect is produced when the platform sorts the projects.

Researches on dynamic influencing factors are also studied. Kim et al. (2015) use 521 crowdfunding projects on the Kickstarter platform as the analysis objects, and have studied the impact of visible information on backers' decision-making, such as the fundraising process rate and the number of backers. Empirical results show that visible information positively affect expectations of backers and the success rate. Li and Duan (2014), from the perspective of the externality and the timeliness of the raise of the Internet, also discuss the impact of the financing progress rate and the remaining time on backers' expected project success, and the results show that backers are more willing to support the project that has won a lot of project financing, which reflects the positive network externalities; for a project with the same amount of money, the investment tendency will decrease with time, which reflects the negative effect of the remaining time. Besides, Robertson and Wooster (2015) make an empirical study towards Kickstarter and find that the invest amount of the first day has positive effect on the project success. In addition, the factors influencing the success of projects also include gender (Greenberg et al., 2014; Kuppuswamy et al., 2017), geographical location (Mollick, 2014; Agrawal et al., 2015; Lin et al., 2016) and social capital (Zheng et al., 2014).

This paper provides insights into the factors affecting success of crowdfunding from a different perspective. First, existing empirical researches are mainly based on the visible financing factors generally set on the crowdfunding website, but studies involving the amount of reward level, amount of money are scarce. In the process of financing, the reward menu is an important reference to attract potential backers. Second, the researches on factors influencing the crowdfunding success have achieve some results. However, the study are mostly based on websites in US, but the mechanisms, project designs and backers' preferences differ from that in China. Study based on platforms in China is necessary. Besides, thorough researches on different platforms can also get some conclusion about the mechanism's effect on project success for different platforms.

III. DATA

A. Data Collection

As mentioned above, we use JD crowdfunding platform and TB crowdfunding platform as our objects of this study. JD crowdfunding belongs to JD Finance. By September 2017, it has raised five billion RMB, and more than eight thousands projects succeed, involving multiple types, among which the reward-based type is the most successful. It has comprehensive project categories which cover technology, household appliance, health, design, entertainment, publication, charity, and others. This platform uses AON mechanism, which means that founders can keep all of the money only if their targets have been achieved at the deadline of fundraising.

We scrape visible data on project page through internet crawler program written by ourselves. The data acquisition process of JD crowdfunding project is divided into three steps. First, we conduct pre-scrape to determine the crawler cycle. As the start-time is hidden in the platform, we can't get the total time projects last, so we have to pre-scrape the project data which stage is "Successful" in project detail page. We get 501 projects data in pre-scraping, and we manually determine the start time. Results show that the mean duration of the 501 projects is 40.25 days, which is consistent with the advertising time given by the platform. Hence, we choose 40 days as our crawler cycle. Second, from September 2th to October 12th in 2017, we run our formal scraping process. The data content covers all the contents visible on the project details page, including the fundraising progress information, the project introduction information, the founders' information and the reward menu information. Finally, we select the projects which the end time is within 2 days; and then we delete the projects which has missing data. Then we get our sample including 714 projects data. The same work is done on TB crowdfunding platform and we finally get 360 projects data.

B. Data Definitions

Finally, 714 and 360 projects data are collected from JD and TB crowdfunding platform, respectively. For JD platforms, we choose success – a virtual variable used to measure whether the project succeed – as dependent variable in following analysis. Based on previous literature, we choose 14 variables that may affect the success of a project combining the features of JD crowdfunding platform. These variables and their definitions are showed below in Table 1. We divided them into four types – quality signal, popularity, founders' experience and reward menu.

Variables in TB have a little difference with JD. The indicators of founders including Created, Backed and Followed, while these kind of variables in TB is Seller and Time. The founder of crowdfunding project is a seller of TMall or TaoBao shop, so we set the Seller to determine the founder's identity. If the founder is TMall seller, the value is 1; otherwise, the value is 0. Besides, TB allows founders set the delivery time after the crowdfunding is completed, so we add the variable Time to study the delivery time's effect on the project success.

We mainly examine the reward menu as indicators of notable success in crowdfunding campaigns. As we know, other variables have been widely discussed in previous literature and we cannot ignore their impacts on our analysis. Thus, we treat them as control variables.

C. Descriptive Statistic:

The sample data mostly come from project detail pages, and the numerical range of variables is large, which causes that direct analysis of data leads to difficult explanation of results. Thus, we set the unit of money involved variables 10 thousand RMB, and the unit of population involved variables one thousand. Table 2 and Table 3 provides results on the descriptive statistics in our sample.

TABLE I. TABLE TYPE STYLES

	Variables	***Definitions***
Financing Results	Success	Binary variable, 1 if success
	Progress	The ratio of money raised and goal
Quality Signal	Goal(￥)	Expected financing result the founder set
	Updates	The amount of progress information
	Video	Binary variable, 1 if the introduction uses a video
	Pictures	The amount of pictures in the project introduction
Popularity	Comments	The amount of all the topics
	Follows	The amount of people who click "follow"
	Likes	The amount of people who click "like",
Founders' Experience	Created	the project amount that the founder created
	Backed	the project amount that the founder backed
	Followed	the project amount that the founder followed
Reward Menu	Level	The total amount of investment reward options
	ED	The amount of preferential levels, except for the agent level
	FLP	The minimum amount of money backers can donate
	SLP	The second minimum amount of money backers can donate

TABLE II. DESCRIPTION STATISTICS OF JD

Variable	***Mean***	***Median***	***Std.Dev***	***Minimum***	***Maximum***
Success	0.810	1.000	0.396	0.000	1.000
Backers	0.945	0.328	1.916	0.001	18.702
Goal	9.410	10.000	12.248	0.500	200.000
Updates	4.760	3.000	5.902	0.000	39.000
Video	0.370	0.000	0.482	0.000	1.000
Pictures	18.960	17.000	9.527	2.000	63.000
Comments	68.250	29.000	154.873	0.000	2106.000
Follows	0.811	0.350	1.321	0.008	10.000
Likes	0.690	0.057	1.511	0.001	20.000
Created	4.280	0.000	11.175	0.000	63.000
Backed	3.85	0.000	13.847	0.000	100.000
Followed	5.810	2.000	9.397	0.000	69.000
Level	6.800	6.000	2.860	2.000	22.000
ED	1.430	1.000	1.974	0.000	16.000
FLP	486.270	188.000	1147.749	1.000	17998
SLP	1140.280	291.500	7958.747	11.000	200000
Obs	714				

TABLE III. DESCRIPTION STATISTICS OF TB

Variable	*Mean*	*Median*	*Std.Dev*	*Minimum*	*Maximum*
Success	0.930	1.000	0.250	0.000	1.000
Backers	3.337	0.603	9.908	0.007	135.344
Goal	10.276	10.000	8.419	0.500	100.000
Period	33.040	31.000	7.877	10.000	61.000
Video	0.550	1.000	0.498	0.000	1.000
Pictures	18.540	18.000	8.947	2.000	56.000
Fans	1.355	0.469	2.343	0.009	23.556
Seller	0.310	0.000	0.465	0000	1.000
Time	20.230	20.000	12.845	0.000	60.000
Level	6.300	6.000	3.134	1.000	23.000
FLP	379.630	168.000	650.014	10.000	5999.000
SLP	663.830	232.500	1627.781	25.000	23500.000
Obs	360				

Analysis of indicators shows that nearly 80% of the samples from JD crowdfunding platform achieved their goal while the number in TB is 93%. Both platforms get a high success rate of crowdfunding projects in our samples. In JD platform, the mean fundraising process rate of successful projects is 389%, while the unsuccessful is 21%. Thus, we can see the significant difference of fundraising results that reflects the trend of polarization of crowdfunding projects.

Considering the indicators representing quality signals, the range of goals of JD is from 5 thousand to 2 million RMB, while this number of TB is from 5 thousand to 1 million RMB. The most commonly used goal of TB is 100 thousand RMB, which is consistent with the sample of JD. The mean of Comments that measuring popularity is 68, and projects get averagely 811 attentions and 690 likes in JD. Only 1% of projects don't create one topic at all.

However, there are still differences between JD and TB. Among the variables of quality signal, though the average number of images used by TB crowdfunding projects is the same as that of JD, videos are more widely used in TB. This may be caused by the different setting of platforms, and we will explore this during next section. Another difference is reflected in Likes. This factor also has platform characteristics. Data shows that projects averagely get 1300 Likes in TB, while the largest amount of a single project is twenty thousand. Compared to the variables that measure backers' factors, such as backers, attention and likes, it can be found that the user scale of TB crowdfunding platform is slightly larger than that of JD.

IV. EMPIRICAL ANALYSIS

A. Logistic model

As the dependent variable is a binary variable, the best model for this data set is the binary Logistic regression model, which can be used to predict the probability of the dependent variable with dichotomous characteristics. It solves the problem that most models require the dependent variables to be a continuous real number. The equation for JD platform is showed below. Note that the model for TB has a little change correspond to the difference of variable set.

$$Success = \beta_0 + \beta_1 \cdot Goal + \beta_2 \cdot Updates + \beta_3 \cdot Video$$

$$+\beta_4 \cdot Pictures + \beta_5 \cdot Comments + \beta_6 \cdot Follows$$

$$+\beta_7 \cdot Likes + \beta_8 \cdot Created + \beta_9 \cdot Backed$$

$$+\beta_{10} \cdot Followed + \beta_{11} \cdot Level + \beta_{12} \cdot ED$$

$$+\beta_{13} \cdot FLP + \beta_{14} \cdot SLP + \sum_{i=15}^{19} \beta_i \cdot Types$$

B. Results

Before regression analysis, the test of tolerance and variance inflation factor (VIF) for all independent variables is made. The results show that tolerance between variables is larger than 0.1, and the VIFs are smaller than 10. There is no obvious collinear problem between independent variables. The regression result is shown in Table 4 and Table 5. For both JD platform and TB platform, the regression involved four dimensions which differs with the amount of variables belong to the reward menu.

Among the factors that measure the quality of the projects, the Goal has a significant negative effect on the success of crowdfunding in JD platform, which is consistent with previous studies (Mollick, 2014; Shi, et al., 2016). As for another quality signal variable, Video, it shows platform characteristics. In JD crowdfunding platform, Video has a positive influence on crowdfunding success at a significant level of 10%, while this number in TB is 1%. The weak significance level in JD is consistent with Frydrych et al. (2014). It means when video is used by most founders, its effect will decline. TB platform has a different layout for video, which may results in a high significance.

TABLE IV. REGRESSION RESULT OF JD

	Variable	*(1)*	*(2)*	*(3)*	*(4)*
Quality Signal	Goal	-0.015*	-0.014	-0.016*	-0.014
	Updates	0.068**	0.067**	0.059*	0.059*
	Video	0.439*	0.464*	0.484*	0.511*
	Pictures	0.030**	0.030**	0.024*	0.024*
Popularity	Comments	0.010***	0.010***	0.009***	0.009***
	Follows	0.708**	0.672**	0.732**	0.699***
	Likes	-0.359**	-0.337**	-0.375**	-0.354**
Founders' Experience	Created	-0.034***	-0.035***	-0.032**	-0.032***
	Backed	0.015	0.015	0.015	0.015
	Followed	0.059***	0.058***	0.059***	0.058***
Reward Menu	Level			0.139***	0.138***
	ED			-0.055	-0.055
	FLP		-0.001*		-0.001*
	SLP		0.000		0.000
	Constant	0.363	0.430	-0.279	-0.254
	-2ll	573.131	571.352	563.432	561.707
	Cox & Snell R^2	0.145	0.147	0.156	0.158
	Nagelkerke R^2	0.233	0.237	0.525	0.255
	Note: *means p < 0.1, **means p < 0.05, ***means p < 0.01				

TABLE V. REGRESSION RESULT OF TB

	Variable	*(1)*	*(2)*	*(3)*	*(4)*
Quality Signal	Goal	-0.123***	-0.134***	-0.150***	-0.183***
	Period	-0.029	-0.021	-0.014	-0.028
	Video	1.743***	1.749***	1.687***	1.661***
	Pictures	-0.002	-0.004	-0.003	-0.003
Popularity	Fans	1.567**	1.688**	1.600***	1.862***
Founders' Experience	Seller	-0.998**	-1.347**	-1.068**	-1.598***
	Time	-0.005	-0.007	-0.008	-0.015
Reward Menu	Level			0.228**	0.336**
	ED				
	FLP		-0.001*		-0.001*
	SLP		0.001		0.002
	Constant	2.529	1.743	1.978	0.321
	-2ll	122.710*	118.622	118.216	111.131
	Cox & Snell R^2	0.138	0.148	0.149	0.166
	Nagelkerke R^2	0.357	0.383	0.385	0.428
	Note: *means p < 0.1, **means p < 0.05, ***means p < 0.01				

Fans on TB crowdfunding platform is similar to Follows on JD, and the regression coefficients show the same characteristics. Both factors have positive effects on the follow-up financing. So we can believe that only people who are really interested in the project will click "Like" or "Follow" to look over the project again. These potential backers are more possible to change and become real backers. Besides, the amount of Fans and Follows also increase other potential backers' investment confidence.

In regression of TB crowdfunding platform, time-related variables have negative effects on the success of projects, but the result is not significant. Nevertheless, previous studies (Mollick, 2014; Kim et al., 2015) find that the longer the period is, the more difficultly the project attract potential backers.

The results of the two platforms are consistent in the study of the Reward Menu. Among the factors of the reward menu, there is a significant positive correlation between the number of return levels and the success of projects. The more levels, the more helpful for the successful project. It means diversified product choice and pricing on the layer classification help to attract potential backers with diverse attention points and demands to participate in. Thus, the project is more possible to be successful. The design of the originators of the rich investment amount and return product portfolio will be a beneficial practice, which is consistent with the results of reward type of previous study.

C. Discussion

Although Goal has significant impact on the success of crowdfunding in JD platform, the significance of this negative impact has diminished and the correlation is no longer significant even when there exist other factors related to the amount of money (FLP, SLP, etc.). We think that the negative correlation between Goal and Success is determined by the intrinsic attributes of crowdfunding campaign. So it is the mechanism JD uses that leads to weak significance. Nowadays, the safeguard mechanism for backers in China has not been fully established. Backers who want to get a crowdfunding reward out of self-interest prefer smaller and easier projects. However, under AON mechanism, the effect on the success of fundraising has diminished, because AON ensures backers can take back all investment if the project fails. It increased backers' confidence. In TB platform, Goal also affects the success of crowdfunding, and it's more significant than JD, which confirms the usefulness of AON.

As mentioned above, Video has a more significant effect on TB compared to JD. The reason for this may be related to the layout of the detail pages of TB crowdfunding platform. Unlike JD and other crowdfunding platforms, which set the first figure's position (the first figure means the figure on the top of the project page that can be seen once a potential backer open the project detail page) alone and insert video under the first figure, TB combines the first figure with video creatively. So the first figure position in TB platform can also be a video. The layout allows a potential backer to see the video once he opens the project detail page. Thus, the significance of Video of TB is better than JD.

Considering variables measuring the founders, we see interesting results in TB. In the model, Seller has a negative effect on the project success. We can explain it as follows: the crowdfunding projects that TaoBao sellers found are easier to get success compared with TMall seller. This conclusion is consistent with the result in descriptive statistics. TaoBao sellers use more videos and pictures, set more reward levels, and get more "likes", which help achieve the goal of fundraising.

V. CONCLUSION

This paper makes an empirical study focusing on the reward-based crowdfunding projects in JD crowdfunding platform and TB crowdfunding platform on the basis of previous studies. We highlight the effects of Goal, Level and other reward menu variables on the success of crowdfunding projects. More importantly, we analyze the characteristics of different platforms and how different operation mechanisms will influence the success of crowdfunding.

The regression results show that Level has a significant positive correlation with the success of projects while SLP has a negative effect on the success of projects. The quality signal variable and the popularity variable also significantly relate to high level of success.

Different platforms with different mechanisms do have different levels of success. There are many reasons for this. Different layouts of the website have an effect on success level. That is why TB crowdfunding platform's Video has a more positive relation with successful projects. Through the Goal variable, we can explore the effect of different mechanisms. Results show that AON can increase backers' confidence, while KIA makes backers feel uncomfortable.

This paper provides practical implications. Founders should choose platforms that fit them best according to their projects and they should set their factors carefully to get a high success level. Besides, the platforms should design their websites appropriately to attract more potential backers.

This paper also has some limitations. The amounts of samples are not large enough. Additional researches are needed to explore the effect of different mechanisms based on a larger data set collected from different platforms with the same characteristics except the mechanisms. Thus, a more reliable result can be got. Finally, the comparison between China and other countries on platforms is needed, which can help us achieve more academic developments and solve real business problems.

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