# Research on Performance of Equity Crowdfunding based on Signalling Theory

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**Abstract:** *Equity Crowdfunding provides new financing channels for innovation and entrepreneurship. Therefore, the study of the performance factors of equity crowdfunding has important theoretical and practical significance. In this paper, In view of the geographical position, based on the signal theory, we select 138 project data from five equity crowdfunding platforms of "lead + follow" model as the research sample. The conclusion of the study showed that minimum amount proportion about financing goal signal, lead amount proportion about leading signal, team numbers about human capital signal and project introduction and discussion number about quality signal is positive effect; project valuation, project status about investment risk signal, min-lead ratio amount is negative effect. At the same time, it also shows that the Geographical location of the project is different, and the factors that have significant influence on the financing performance are different.*

**Keywords:** Equity crowdfunding; Signalling theory; Geographical location; Financing performance

## 1. Introduction

Since the global financial crisis, countries generally fall into the economic downturn, corporate finance, especially innovative venture financing is more difficult. In order to establish the mechanism of capital market of small refinancing, to carry out equity crowdfunding financing pilot, Premier Li Keqiang put forward the "public entrepreneurship and innovation", the equity crowdfunding has been rapid development. However, the study has found that foreign scholars have made theoretical and empirical research on the financing performance of equity crowdfunding, but the domestic literature research shows little financing performance. Moreover, the existing literature research is less involved in the financing model and geographical location factors of projects.

Based on the above considerations, in this paper, with " lead + follow " pattern of financing the success of the project as the research sample, using the regression model for empirical research, analysis of the financing performance factors of equity crowdfunding, to promote the growth of innovative projects and the rational use of social resources. The results show that min-amount proportion, lead proportion, project discussion, team numbers, project valuation, selling share have a significant positive impact on the performance of equity financing. But the Amount goal and Min-amount lead ratio have negative impact on the performance of equity financing. The results also show that the location of the project is different, and the performance factors of financing are different.

## 2. Literature Review

In the internet background, as a new financing way, equity crowdfunding has aroused the widespread concern of scholars. Xia Enjun etc. [1] (2016) redefined equity crowdfunding in concept. It is a kind of direct investment and financing method, which is essentially an investment contract signed by both sides in order to buy shares or income sharing plan. Therefore, the financing performance of equity has become the focus of attention of all parties, both domestic and foreign literatures have been studied.

From foreign study, the literature has focused on the theoretical analysis and research. For example, Connelly BL etc. [2] (2011) found the key to success is to equity crowdfunding sponsor information and use of funds, at the same time, the project has an important influence in pictures, text, video, risk description, web content update frequency for equity financing performance, but they are not designed to model empirical analysis. Agrawal etc. [4] (2015) found that social capital, human capital and intellectual capital, internal organizational structure and management experience and external social evaluation has a significant impact on the performance of the financing, despite the introduction of human capital, but there is no clear definition of human capital. Ahlers etc. [4] (2015) found that the quality of the project is the effective signal of financing performance, the results show that uncertainty and financial information disclosure is the key factor affecting the performance of financing. Mollick etc. (2014) [5] research on the potential power of the project financing success and failure, found that the project quality and geographical location are the key factors of equity financing performance. However, they were not taken seriously with "lead + follow" mode, introducing location only as an explanatory variable. Kang L, Jiang Q, Tan C H (2016) [6] found that geographical location was related to crowdfunding, but did not specify the specific mechanism of impact.

From the domestic research, Li Qian and Luyao Wang (2015) [7] introduced the lead investor as dummy variables into the model, and the influence of the existence of lead investor on the financing performance is analyzed. Zhao Yao(2015)[8] analyzed the functions of the leading investor and found that the "lead + follow " model improved the

trust crisis due to the strangeness of investment groups, the uncertainty of earnings distribution and the low success rate of innovation projects. Although both of them involve the information of lead investor ,they haven't studied the specific role of lead investor in the financing process. Peng Hongfeng, Mi Yanxiang (2017)[13]has studied the quality signals of GEM project and explored its mechanism. However, they haven't fully excavated more quality signal factors. Chen Lin and Yu Mingyang（2016）[15] based on signal theory and Herding theory, empirical research shows that lead proportion, lead investor disclosure exit plan and lead investors disclosed prior earnings have a significant impact on financial performance. Qian Ying and Zhu Sha (2017) [8]studied the role of lead investor and their herd behavior through project categories (technology and non-technology). Although lead investor was analyzed, they did not studies the types of investors. Xia Enjun etc（2016）[0] take the lead amount as an intermediary variable, and finds that the project valuation has a significant positive impact on the financing performance, and the selling shares have a significant negative impact on the financing performance. Zheng Haichao etc.（2015[9]in the study of innovation project financing performance factors that project valuation has significant negative impact on the completion of financing ratio, the selling shares to finance the completion rate did not significant effect, while the number of employees has a significant positive impact on financial performance. This is very different from Xia Enjun's research, and it is worth exploring again. Wang Na (2017)[10] found that the promoter characteristic information signal is also an important basis for investor, which is similar to the human capital signal introduced in this paper, but not the same. Huang Ling and Zhou Qin (2014) [10]are based on the financing incentive and restraint mechanism, and use the data of Demohour to find that effective quality signals can induce investment incentives. The unique feature of the research is that the signal mechanism is proposed, but all the signals are not excavated.

As can be seen from the above literature, scholars have a lot of research on the performance factors of equity financing, but there are still some shortcomings. First of all, the existing literatures do little research on the financing performance of "lead + follow" mode, and the choice of the impact factors is not rich enough. Secondly, there is no literature to study the impact of geographical location of the project on the performance of equity financing. In this paper, the sample data under "lead + follow" mode is taken as the research object, and the geographical position is taken as the environment variable. Based on the signal theory, this paper makes an empirical analysis.

# 3. Theoretical Hypothesis and Research Model

## 3.1 Lead investors and follow investors

From a worldwide perspective, there are many modes of equity crowdfunding, which can be summed up as three types from the angle of government supervision: (1) Public offering model, the typical representative of the JOBS bill after the promulgation of the United States. In this mode,

the enterprise will raise funds according to equity crowdfunding regulation, and mandatory information disclosure and registration procedures can be exempted under certain conditions; (2) Small amount public offering model, Australia's ASSOB is one of the representatives. In this mode, the enterprise does not need to submit a prospectus to the securities regulatory authorities, and may issue securities according to the exemption rules for funds; (3) Private offering model, which is the typical representative of the British model.

The equity crowdfunding of China mainly adopt limited partnership mode, the existing literature clearly defined with experienced investors become a general partner (lead investor), while other investors become a limited partner (with investment). For example, Dajiatou platform, it is China's first angel investment and venture projects private equity investment and financing of the joint equity crowdfunding platform. Through the examination of the lead investor who will collects project and interviews with entrepreneurs, confirm lead invest, the platform will sign an agreement with the sponsor, the follow investor will start to invest project on-line, it is "lead + follow" mode.

## 3.2 Equity crowdfunding and Geographical location

From the theory of regional economy, Hu Yan (1994) [20] found that the ways and means of geographical location and economic relations are particularly important, which can affect economic development through different ways. The superior geographical position is related to superior spatial, is also an advantage of software , labor supply, technological innovation, talent supply, is also an advantage of hardware, traffic conditions, education status, housing security a, can promote the development of the region. On the contrary, it will delay or even hinder development..

For example, Beijing, Shanghai, Guangdong, Zhejiang and other places, the geographical location of economic development will have a great role in promoting, and Gansu, Qinghai, Guizhou and other places, geographical position will restrict economic development. The financing performance of the equity is closely related to the level of economic development, while the economic and geographical location often closely linked. Therefore, the study of the location of equity financing cannot be separated from the study of the location.

## 3.3 Equity crowdfunding and Signaling theory

In the financial market, information asymmetry exists between investors and financing parties, resulting in moral hazard and adverse selection. As the Internet era of equity crowdfunding platform, also faced with information asymmetry.

Signal theory is the important theoretical basis of this paper, the equity crowdfunding project can transmit some positive signals to investors through various quantitative characteristic information, so as to reduce the negative attitude of investors to the project. Wu Jianyun (2016)[17] found that in order to make the success of the project financing, the initiator released a series of signal to

investors clearly show the value of investment, but for self-interest motivation, sponsors will only publish good information, and will not release the bad information. Therefore, investors do not have complete information about the project. As an intermediary, platform will accept the sponsors submitted information, and through the project review work display item related to other information, so as to alleviate the problem of information asymmetry in a certain extent.

## 3.4 Research hypothesis

In general investment and financing, the degree of information asymmetry faced by investors is very serious. Similarly, in the equity crowdfunding, the information asymmetry still exists. Signaling theory can play the role of reducing information asymmetry in the process.

In the process of equity crowdfunding, involving a lot of signals, this paper will be summed up as five signals: financing goal, investment risk, human capital, lead investor and project quality. The financing goal refers to the objective information that the sponsor releases on the platform, including amount goal and the minimum amount (when the empirical analysis is converted to min-amount proportion). The lead signal refers to the information which reflects the relevant circumstances of the project leader, including lead amount (when the analysis is translated into the lead amount ratio) and lead type. The human capital signal refers to project human factor information, including team members and founder type. The project quality signal refers to the quality of the project itself (investment, profitability), including project introduction, project discussion and project status. The investment risk signal refers to the information that reflects project uncertainty, including selling shares, min-lead amount ratio (lead amount / minimum amount) and project valuation. In this paper, we construct the model based on signal theory and make the following hypotheses.

### (1) Financing Goal Signal
In the process of equity crowdfunding financing, the platform provides the financing goal variable of the project, which is an important the factor of financing completion rate. Ahlers etc. (2015)[2] conducts empirical research on the data of the national platform and finds that the higher the amount goal is, the lower the project financing performance is. The financing goal variables in this paper, amount goal, min-amount proportion and min-lead amount ratio.

Amount goal means the total amount of financing set by the promoter, min-amount proportion is the ratio of the minimum amount to the amount goal. The min-lead amount ratio is the ratio between the minimum amount and the lead amount. Generally speaking, the greater amount goal, the lower financing completion rate. At the same time, the greater min-amount proportion, indicating that the promoters of confidence with the follow investors, and then the higher financing completion rate. The min-lead amount ratio is also an important signal to measure financing goal, indicating the proportion of lead amount and follow amount, reasonable ratio can promote financing performance.

This paper makes the following assumptions:
**H1-1:** Amount goal has a significant negative impact on the financing completion rate.
**H1-2:** Min-amount proportion has a significant positive impact on the financing completion rate.
**H2-3:** Min-lead amount ratio has a significant negative impact on the financing completion rate.

### (2) Leading signal
In the process of equity financing, in order to realize the financing of the project, the specific financing process of the platform is different. Equity financing models are mainly divided into general mode and "lead + follow" mode. China's platform often use "lead + follow" mode, compared with follow investor, the lead amount is greater, and has more responsibilities and interests than follow investor. Therefore, the leading signal has an important impact on the follow investor decision and has a significant impact on the financing completion rate.

In this paper, leading signals include lead amount proportion and lead type. Lead amount proportion refers to the ratio of the amount of lead investor and the amount goal, the greater lead amount proportion, indicating that the lead investor for the future development of the project optimistic attitude, the financing completion rate to promote. Lead type refers to the type of lead investor, which is divided into institutions and individuals, to be specific, the institute has more experience and economic strength than the individual, and the easier it is to complete the financing.

This paper makes the following assumptions:
**H2-1:** Lead amount proportion has a significant positive impact on financing completion rate.
**H2-2:** Lead type has a positive impact on the financing completion rate.

### (3) Human capital signals
Economic theory shows that human capital is an important factor of production, which shows that human capital is also an important factor affecting the performance of project financing.

From the perspective of human capital, the completion rate of project financing factors include team members and founder type. Jing haibing（2016）[16]finds that the human capital information of the project can reduce the uncertainty of investment and enhance the sense of trust. From team members, more team members show higher profitability (entrepreneurs can use project revenue to pay workers), and have more experience to solve problems encountered in the project, which will increase project financing completion rate. In addition, project financing completion rate is closely related to founder type. Generally speaking, the company founder has more experience and financial strength, and it is easier to obtain investment.

This paper makes the following assumptions:
**H3-1:** Team number has a significant positive impact on the financing completion rate.
**H3-2:** Founder type has a significant positive impact on the financing completion rate.

**(4)    Project quality signal**

In the process of investment, the project with high success rate and low risk is better in quality and easy to obtain funds. Therefore, it is important for investors to pass on the quality of the project. The quality signals of the project are often described by the sponsor of the project. Mollick uses the "video description" to evaluate the quality of the project, but this is not comprehensive and accurate.

In this paper, quality signals are transmitted by project introduction and project discussion. Project discussions mean when the sponsor releases on the platform, all interested investors participating in the project discuss the number of projects. The larger the number of discussions, the better the quality of the project. Project introductions mean when an initiator releases a project on a platform, it introduces methods and details, including pictures, text, and video. As a result, the higher the degree of project introduction, the more comprehensive quality information is delivered to investors.

This paper makes the following assumptions:
**H4-1:** project presentation has a significant positive impact on the financing completion rate.
**H4-2:** project discussions has a significant positive impact on the financing completion rate.

**(5)    Investment risk signal**

For investors, risk is a valuable signal, equity investors can assess the investment risk from the project valuation, project status, sell shares and others.

Project status refers to the technology and risk of products being put into the market, according to the comprehensive nature when the product enters the market. In the process of launching the product, it is necessary for the entrepreneur to announce the status of the product. The items studied in this paper include the following: development, on-line, existing income and profit. We know that there is a lower level of uncertainty about projects of existing income and profit. Selling shares refers to the proportion of the rights sold by the promoters, and the promoters can determine the proportion of the shares to be sold. The higher the proportion of equity transfer, the entrepreneur retention rights is low, to a certain extent on the project may face higher risk. Project valuation is the ratio of the amount goal to the selling shares. Generally speaking, the higher valuation of the project indicates the greater complexity of the project, which will increase the investor's risk perception psychology, thus reducing the investor's willingness to invest.

This paper makes the following assumptions:
**H5-1:** Project valuation has a significant positive impact on the financing completion rate.
**H5-2:** Project status has a significant positive impact on the financing completion rate.
**H5-3:** Selling shares has a significant negative impact on t the financing completion rate.

## 4.    Modeling Design

### 4.1 Signalling Models

According to signal theory, this paper will divides signal of equity crowdfunding into Financing goal signal, lead signal, human capital signal, quality and investment risk signal. And according to the assumptions, develop the following conceptual model.
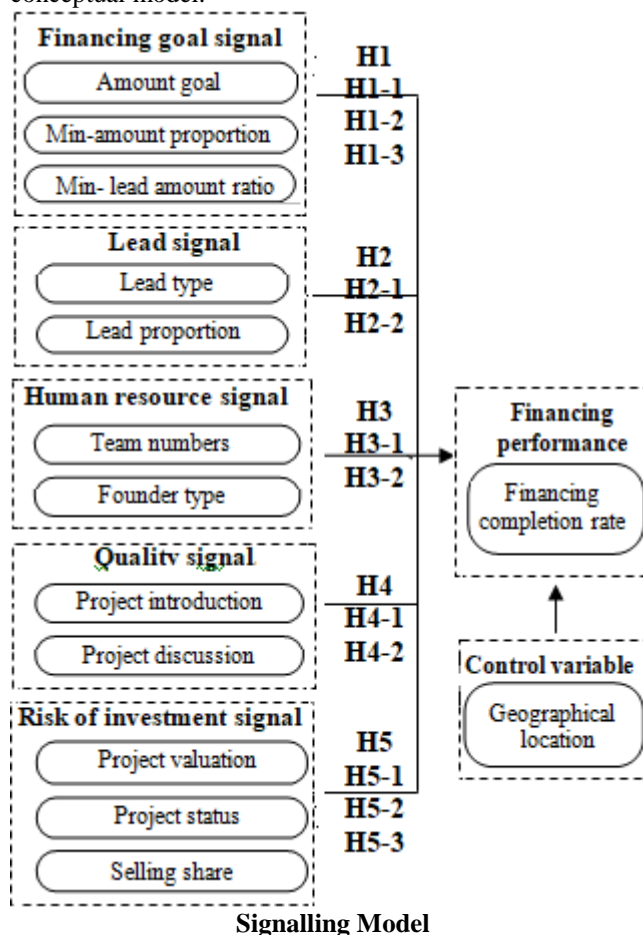


**Signalling Model**

### 4.2 Research variables design

To prove the above hypothesis, this paper uses the relevant information of China equity crowdfunding platform to study. According to public web data of ZCZJ platform, By May 2017. There are 118 equity crowdfunding platforms in our country. From the point of view of the crowdfunding model, There are 68 "Lead+ Follow" model platforms, Account for 57.6% of the total. In consideration of China equity crowdfunding data acquisition, this paper selects 115 public project data of five equity crowdfunding platforms (angel sinks, we cast off, capital, poly chips) , And select data index of unified statistic caliber as research variable. There are 138 information integrity of project data.

In order to study the influence factors of equity crowdfunding performance, three types of variables are designed in this paper: Explained variables, Explanatory variables, and Control variables. Referring to Ahlers etc. [4] research design, The explanatory variables of this paper are performance. In addition this paper selects the financing completion ratio (%) as the measurement index of project financing performance when the financing deadline is closed.

As mentioned above, this paper selects five signals: Financing goal signal, Quality signal, Lead signal, Investment risk signal and Human recourse signal. Therefore, Amount goal, Min-amount ratio and Min-lead ratio for reflecting financing goal signal; introduction methods, Discussion quantities for reflecting quality of signal; with lead proportion and lead type (Reference Zhao Yao and Lu Lei [7]) to reflect lead signal; selling share, project valuation and project status (Zheng Haichao [9]) to reflect risk of investment signal; Team numbers and founder type to reflect Human resource signal. (Variables are defined in table 1)

**Table 1:** Variables and Definitions

| Attribute | Name | | Symbol | Explain | |
|---|---|---|---|---|---|
| Explained | Financing completion rate | | FR | Amount financed/Goal financing（%） | |
| Explanatory | Financing goal signal | Amount goal | AG | Goal financing amount | |
| | | Min-amount proportion | MAR | Minimum investment amount/ Goal financing amount （%） | |
| | Lead signal | Min-amount lead ratio | MLR | Minimum investment amount/Lead amount（%） | |
| | | Lead amount proportion | LR | Lead amount/Goal financing amount | |
| | Human recourse signal | Lead type | LT | Project lead type（1：Corporation，2：Individual） | |
| | | Team numbers | GN | Number of core team members of the project | |
| | Quality signal | Founder type | FT | Project founder type（1：Company, 2: Individuals） | |
| | | Project introduction | PI | Project introduction methods and degree (1: text, 2: text and pictures, 3: text, pictures and video) | |
| | | Project discussion | PD | The number of subjects discussed in the project | |
| | Investment risk signal | Project valuation | PE | Goal financing amount/Selling share | |
| | | Selling share | SR | Selling shares of the project（%） | |
| | | Project status | PS | Status of project products (1: development, 2: online, 3: existing income, 4: already profitable) | |
| | Project categories | | PC | 1:IT 2:PC  3:B2C 4:Cultural creativity 5:Mobile Internet | |
| Environment | Project geographical | | PG | The geographical location of the project | |

## 5. Empirical Analysis

### 5.1 Descriptive statistics of samples

For the above samples and data, using SPSS 20.0 statistical software for processing, and get the following statistical results. (Table 2)

**Table 2:** Descriptive statistics of continuous data

| Variables | Minimum | Maximum | Mean, | Variance |
|---|---|---|---|---|
| FR | 100.00% | 1080.00% | 138.96% | 83.72% |
| PE | 79 | 15000 | 2033.82 | 5611232.2 |
| SR | 2.00% | 80.00% | 14.48% | 1.20% |
| AG | 20 | 1200 | 209.08 | 48450.871 |
| MR | 0.12% | 10.00% | 1.40% | 0.03% |
| PD | 4 | 181 | 37.11 | 660.506 |
| PI | 1 | 3 | 2.51 | 0.296 |
| GN | 3 | 40 | 13.35 | 58.112 |
| LR | 0.33% | 238.10% | 31.47% | 11.54% |
| Total | 138 | | | |

**Table 3:** Descriptive statistics of discrete data

| **Project categories** | Frequency | Percentage（%） | Average completion rate |
|---|---|---|---|
| IT hardware/software | 19 | 13.8 | 1.356 |
| PC Internet | 28 | 20.3 | 1.467 |
| B2C | 20 | 14.5 | 1.364 |
| Cultural creativity | 10 | 7.2 | 1.147 |
| Mobile Internet | 61 | 44.2 | 1.485 |
| Total | 138 | 100.0 | 1.390 |
| Project geographical | Frequency | Percentage（%） | Average completion rate |
| Beijing | 17 | 12.3 | 1.917 |
| Fujian | 4 | 2.9 | 1.113 |
| Guangdong | 31 | 22.5 | 1.506 |
| Guangxi | 1 | 0.7 | 1.200 |
| Hannan | 1 | 0.7 | 1.180 |
| Henan | 1 | 0.7 | 1.080 |
| Heilongjiang | 1 | 0.7 | 1.100 |
| Jiangsu | 2 | 1.4 | 1.015 |
| Shandong | 1 | 0.7 | 1.130 |
| Shanghai | 21 | 15.2 | 1.343 |
| Sichuang | 3 | 2.2 | 1.260 |
| Tianjin | 1 | 0.7 | 1.200 |
| Zhejiang | 52 | 37.7 | 1.250 |

| Chongqin | 2 | 1.4 | 1.065 |
|---|---|---|---|
| Total | 138 | 100.0 | 1.390 |
| **Project status** | Frequency | Percentage（%） | Average completion rate |
| 1 | 20 | 14.5 | 1.221 |
| 2 | 36 | 26.1 | 1.486 |
| 3 | 49 | 35.5 | 1.326 |
| 4 | 33 | 23.9 | 1.472 |
| Total | 138 | 100.0 | 1.390 |
| **Founder type** | Frequency | Percentage（%） | Average completion rate |
| 1 | 70 | 50.7 | 1.405 |
| 2 | 68 | 49.3 | 1.374 |
| Total | 138 | 100.0 | 1.390 |
| **Lead type** | Frequency | Percentage（%） | Average completion rate |
| 1 | 79 | 57.2 | 1.448 |
| 2 | 59 | 42.8 | 1.346 |
| Total | 138 | 100.0 | 1.390 |

The results of the above table 2 and table 3 can be drawn, Mobile Internet and PC Internet ,The percentage of projects completed by financing respectively is 44.2% and 20.3%, and average financing completion rate respectively is 1.485 and 1.467, both are the biggest. It can be explained that compared with other industries, Mobile Internet and PC Internet are more popular with investors. From product status, Existing income and Onlined,The percentage of projects completed by financing respectively is 35.5% and 26.1%, and average financing completion rate respectively is 1.472 and 1.486, both are the biggest.. This shows that the higher the project development stage, the more mature the project, the lower the uncertainty faced, so the better the financing performance. From founder types, the percentage of the company is 50.7%, the percentage of individuals is 49.3%, and average financing completion rate respectively is 1.405 and 1.374. It can be seen that company founder is bigger than the individual founder, also shows that the company as the initiator of the project than easier access to financing, financing performance is good. From lead types, the percentage of the corporation is 57.2%, the percentage of individuals is 42.8%, and average financing completion rate respectively is 1.448 and 1.346. It can be seen that corporation lead is bigger than the individual ,and corporation lead deliver to more project quality information to the investor than the individual lead, therefore, the corporation lead leads the investment to be easier to obtain the financing than the individual lead.

Table 3 also shows that, in the top 4 of average financing completion rate respectively is Beijing,(1.917) Guangdong(1.506), Shanghai(1.343) and Zhejiang(1.250). And in the top 4 of the percentage of the corporation respectively is Beijing (12.3%), Guangdong (22.5%), Shanghai (15.2%) and Zhejiang (37.7%). It may be concluded that equity crowdfunding performance and the financing completion rate are closely related to the regional GDP in 2017. Therefore, the higher the level of economic development, the more innovation and financial support. There will be more entrepreneurial projects posted on the platform, there are also more projects to get higher financing performance.

## 5.3 Analysis of the influence of five signals on financing performance

Based on the sample data and SPSS regression analysis, this paper tests five types of research hypotheses, and the regression results are shown in table 4.

**Table 4:** Regression results of five signal variables on financing performance

| Hypothesis | Variable | Standard | T |
|---|---|---|---|
| **H1** | AG | -0.322 [**] | -6.756 |
| | MR | 0.210 [**] | 3.586 |
| | MLR | -0.113 [*] | -2.03 |
| **H2** | LR | 0.178 [*] | 0.037 |
| | LT | 0.056 | 0.517 |
| **H3** | FT | 0.017 | 0.199 |
| | GN | 0.024 [*] | 2.036 |
| **H4** | PI | 0.163 [**] | 4.001 |
| | PD | 0.136 [**] | 2.738 |
| **H5** | PE | 0.819 [**] | 15.143 |
| | PS | 0.272 [**] | 3.344 |
| | SR | -0.193 [*] | -2.371 |
| **.significant correlation at 1% confidence level; *. Significant correlation at 5% confidence level. | | | |

The above table is a regression model that does not have geographical location as an environmental variable.

### 1) Regression analysis of financing goal signal variables and financing performance factors

From the regression results, we can see that amount goal has a significant negative impact on the financing completion rate, thus supporting the paper H1-1. This shows that under the same conditions, the larger amount goal set by the initiator, the smaller the financing completion rate, the worse the financing performance, which is the same as the conclusions of Ahlers etc. The regression results of Table 4 also show that the min-amount lead ratio has a significant negative impact on the financing completion rate, thus supporting the paper H1-2. It is indicated that under other conditions remain unchanged, the min-amount lead ratio o becomes smaller and the financing completion rate becomes larger, so the min-amount and the lead amount should be set in a reasonable scope to enhance the financing performance. The research has not been discussed in the literature, this paper has positive significance to improve the financing performance.

The results of Table 4 also show that min-amount proportion (excluding data equal to 0) has a significant positive effect on the financing completion rate, thus supporting the paper H1-3. This shows that when the other conditions remain unchanged, the higher the min-amount proportion, will send a greater profit signal, increase the interest of investors, the project financing completion rate is high, financing performance is better. In this regard, the literature has not been studied.

**2) Regression analysis of lead signal variables and financing performance factors**
From table 4 the regression results show that the lead amount proportion has a significant positive effect on the financing completion rate, which support the paper H2-1. It indicates that the greater t lead amount proportion, project financial performance is better. Obviously, the research in this paper is different from the existing literature research that is studied the impact of lead on financing performance. The results of Table 4 also show that the lead type has no significant positive impact on the financing performance, and thus does not support the paper H2-2.

**3) Regression analysis of human capital signal variables and financing performance factors**
From table 4 the regression results show that the team number have positive influence on financing completion rate, which support the H3-1, suggesting that other conditions remain unchanged, the more team number, the better the performance of financing. Similar to existing literature. The results of Table 4 also show that the founder type has no significant positive impact on the financing performance, and thus does not support the paper H3-2.

**4) Regression analysis of quality signal variables and financing performance factors**
From the regression results of Table 4, it can be concluded that the degree of project introduction has a significant positive effect on the rate of financing completion, thus supporting the paper H4-1. It indicates the better quality display, the better the financing performance. In this respect, the video factor has not been introduced into the existing literature, and text, picture and video are introduced to measure the degree of the introduction of the three items. As can be seen from table 4, the project discussion has a significant positive impact on the financing completion rate, thus supporting the H4-2. This shows that the more discussions the project has, the better the quality display, and the higher the financing performance. The results of this paper further support the conclusions of Mollick (2014)[5] and Huang Ling and Zhou qin (2014)[10].

**5) Regression analysis of investment risk signal variables and financing performance factors**
The regression results of Table 4 show that the project valuation has a significant positive impact on the financing completion rate, thus supporting the paper H5-1, this is the same as Xia Enjun etc. (2016)[0]. In addition, the results also show that the product status has a significant positive impact on the financing completion rate, thus supporting the paper H5-2. This is different from research conclusion of Zheng Haichao etc. (2015)[9], the empirical research is carried out in this paper, but it is the same as the conclusion

of Jing haibing[14]. The results show that the selling shares have a negative impact on the financing completion rate, so as to support the paper H5-3.

**5.4 The relationship between geographical location and financing performance factors**

In the process of equity crowdfunding financing, due to the different population, universities, environment and culture, the impact of geographical location on financing efficiency is different. In this respect, some literatures have been involved, but they haven't gone deeper. For example, Agrawal etc. (2015)[2] have studied the relationship between location and attention degree, but there is no empirical research on the relationship between geographical location and financing performance.

Therefore, this paper takes the geographical position as the environment variable, make hypothesis through the signal theory, and establishes the model to study the influence factors of the financing performance. The regression results are shown in table 5.

**Table 5:** Regression results of geographical location and financing performance factors

| PG | Hypothesis | Variables | Beta | T |
|---|---|---|---|---|
| Beijing | H1 | AG | 0.275 | 0.837 [(*)] |
| | | MR | 0.600 | 2.760 [(*)] |
| | | MLR | 0.540 | 2.128 [(*)] |
| | H2 | LR | -0.327 | -1.840 [(**)] |
| | | LT | -0.083 | -0.506 |
| | H3 | FT | 0.171 | 1.482 |
| | | GN | 0.227 | 1.715 [(*)] |
| | H4 | PI | 0.005 | 0.033 |
| | | PD | 0.582 | 3.230 [(**)] |
| | H5 | PE | 0.094 | 0.371 |
| | | PS | 0.028 | 0.174 |
| | | SR | -0.593 | -2.057 [(*)] |
| Guangdong | H1 | AG | -0.362 | -1.804 [(*)] |
| | | MR | 0.443 | 3.099 [(***)] |
| | | MLR | -0.025 | -0.172 |
| | H2 | LR | -0.001 | -0.005 |
| | | LT | -0.042 | -0.264 |
| | H3 | FT | 0.224 | 1.892 [(*)] |
| | | GN | 0.401 | 2.500 [(**)] |
| | H4 | PI | -0.124 | -0.892 |
| | | PD | -0.147 | -0.764 |
| | H5 | PE | 0.594 | 2.793 [(**)] |
| | | PS | 0.237 | 1.294 |
| | | SR | -0.198 | -1.253 [(**)] |
| Shanghai | H1 | AG | -0.098 | -0.875 |
| | | MR | -0.393 | -3.268 [(**)] |
| | | MLR | 0.245 | 2.681 [(**)] |
| | H2 | LR | 1.137 | 6.072 [(***)] |
| | | LT | -0.107 | -1.303 |
| | H3 | FT | -0.113 | -1.933 [(*)] |
| | | GN | 0.157 | 2.250 [(*)] |
| | H4 | PI | 0.094 | 1.587 |
| | | PD | 0.130 | 1.503 |
| | H5 | PE | 0.532 | 5.325 [(***)] |
| | | PS | 0.173 | 1.658 |

| | | | SR | -0.114 | -1.617 (**) |
|---|---|---|---|---|---|
| Zhejiang | H1 | | AG | 0.075 | 0.495 |
| | | | MR | 0.776 | 4.646 (***) |
| | | | MLR | -0.485 | -2.597 (**) |
| | H2 | | LR | 0.284 | 2.479 (**) |
| | | | LT | -0.140 | -1.304 |
| | H3 | | FT | 0.024 | 0.237 |
| | | | GN | 0.232 | 2.412 (*) |
| | H4 | | PI | 0.072 | 0.682 |
| | | | PD | 0.210 | 1.994 (*) |
| | H5 | | PE | 0.017 | 0.119 |
| | | | PS | 0.161 | 1.643 |
| | | | SR | -0.132 | -1.262 (*) |

***.significant correlation at 1%;
**. significant correlation at 5%;
*.significant correlation at 10%.

The above table is a regression model that uses geographical location as an environmental variable, which is consistent with the research hypothesis:

1) From the regression results, it can be seen that when the project is located in Beijing, amount goal, min-amount proportion, min-lead amount ratio and t project discussions have a significant positive impact on the financing performance. Lead amount proportion and selling shares have significant negative impact on financing performance.

2) From the regression results, it can be seen that when the project is located in Guangdong, min-amount proportion, founder type, team number and project valuation have significant positive impact on the financing performance. But amount goal and selling share have the remarkable negative influence to the financing performance.

3) From the regression results, we can see that when the project is located in Shanghai, min-lead amount ratio, lead amount proportion, team number and project valuation have a significant positive impact on the financing performance. And min-amount proportion, founder type and selling shares have a significant negative impact on the financing performance.

4) From the regression results, we can see that when the project is located in Zhejiang, min-amount proportion, lead amount proportion, team number and project discussions have a significant positive impact on the financing performance. And min-lead amount ratio and selling shares have a significant negative impact on the financing performance.

Therefore, the conclusion is that when the project is located in Beijing, Guangdong and Zhejiang, the greater min-amount proportion, the better the financing performance, and when the project is located in Shanghai, it is opposite to the above. It shows that in Beijing, Guangdong and Zhejiang, the greater min-amount proportion provided by the financiers, the more attractive the investor will contribute to the performance of the financing. In Shanghai, however, the larger min-amount proportion is, the more likely it will be to impede financing performance. This shows that, under certain conditions, the impact of min-amount proportion on the performance of financing has a significant relationship with geographical location.

Moreover, the results also show that when the project is located in Beijing, Guangdong, Shanghai and Zhejiang, the impact of selling shares on the financing performance is negative. The conclusions of this study by Xia Enjun etc. are consistent (2016) [1]. It is indicate that, under certain conditions, the impact of selling shares on financing performance is not related to geographical location. In addition, the results show that when the project is located in Guangdong, Shanghai and Zhejiang, the impact of team number on the financing performance is positive, while the project is located in Beijing, it is opposite. It shows that the more team number there are in Guangdong, Shanghai and Zhejiang, the better the financing performance. While in Beijing, it is opposite. It is indicate that, under certain conditions, the influence of the team number on the project financing performance is related to the location of the project.

Finally, the results show that when the project is located in Beijing and Shanghai, min-lead amount ratio took effect on financing performance is significantly positive, but when the project is located in Zhejiang, which is significantly negative, when the project in Guangdong, which has no influence. It shows that in Beijing and Shanghai, the greater min-lead amount ratio, the better the financing performance of the project, and Zhejiang is the opposite, has nothing to do with Guangdong.

## 6. Research Conclusions

The equity crowdfunding plays an important role in solving the financing problem in the innovation process, although the existing literature has many studies on the financing performance factors, the research is not comprehensive enough. Based on the signaling theory, this paper makes a comprehensive analysis of the equity financing performance factors , and the contribution of this paper is three: Firstly, the literature study only the existence of lead impact on financing performance, and in this paper ,the further study of the lead amount proportion impact on financing performance. Secondly, Literature has been used to describe the introduction of text and pictures, and the introduction of words, pictures and videos as a measure of project presentation, is more comprehensive and rich than before. Thirdly, the paper takes the first geographical location as the environment variable to introduce the research model, and explores the relationship between the financing performance factors and geographical location.

The empirical results show that the greater lead amount proportion, the smaller amount goal, the lower min-lead amount ratio, the higher project introduction, and the more mature product status, the better the financing performance. The results also show that geographical location of the project is related to the financing performance. The above conclusion to improve the financial performance have practical significance. As a sponsor, in terms of financing goal signal release project should be set to the amount goal low, attract the attention of investors; in lead signal, should do due diligence, real effective, credible signal; in the aspect of project quality signal, the initiator should as far as possible text, pictures and video to introduce the project, so that investors can read more effective information; in the

aspect of human capital signal, should increase the number of core team, in order to stabilize investor psychology.

As a new way of financing, equity crowdfunding influence by the government, Chinese characteristic market, the initiator, platform and investors of China and other factors, so that the conclusions of this paper have certain limitations such as lack of access to data, due to limitation of data collected in this paper is the panel data, and cannot contain the time series, and the geographical position is less choice, these need to be further research in the future.

## References

[1] Xia Enjun, Li sen, Zhao Xuanwei. The impact of project uncertainty on the financing performance of equity crowdfunding.--with the amount of lead investor is the intermediary variable, [J]. Technology Economics, 2016, (07): 38-45.

[2] Connelly BL，Certo ST, Ireland RD，et a1．Signaling theory：A review and assessment[J]．Journal of Management，2011，37(1)：39-67

[3] Agrawal A, Catalini C, Goldfarb A. Crowdfunding: Geography, Social Networks, and the Timing of Investment Decisions[J]. Journal of Economics & Management Strategy, 2015, 24(2):253–274.

[4] Ahlers GKC，Cumming D，Gtinther C，ela1 Signaling in Equity Crowdfunding[J]. Entrepreneurship Theory and Practice, 2015, 39(4):955–980.

[5] Mollick E．The dynamics of crowdfunding：An exploratory study[J]．Journal of Business Venturing，2014，29(1)：1-16

[6] Li Jing，Wang luyao. Study on the operation mode and risk of China's equity crowdfunding [J]. Journal of Shenyang University of Technology ((Social Science Edition), 2015, 8(5):436-441.

[7] Zhao Yao, Lu li. The Explanation of the Function of the Leading Investor in Equity Crowd Funding and Financial Disintermediation [J]. Finance & Economics, 2015(12):28-36.

[8] Qian Ying，Zhu Sha. The Research on Herding Behavior and the Role of Leader Investor of Equity-based Crowd-funding Based on Different Project Types [J]. Science & Technology Progress and Policy,2017,(01):15-19.

[9] Zheng Haichao，Huang Yumeng，Wang Tao. Antecedents of Equity-based Crowdfunding Success for Innovation Projects [J]. China Soft Science,2015,130-138.

[10] Wang Na. A study of the impact of promoter characteristics on the success of creative crowdfunding - DREAMORE [J]. Communication of Finance and Accounting,2016,(29):47-50+129.

[11] Huang Ling, Zhou Qin. A study on the design of heterogeneous financing incentives and self-feedback mechanism for creative crowdfunding -- Demohour[J]. China Industrial Economics,2014(7):135-147.

[12] Fan Jiachen. Research on business model of all chips [J]. Enterprise Economy, 2013(8):72-75.

[13] Peng Hongfeng ,Mi Yanxiang. Information Asymmetry, Signals' Quality and Performance of Equity-Based Crowdfunding [J]. Finance & Trade Economics, 2017,(05):80-95.

[14] Xiao Benhua. The Development of Crowdsouring Mode in United States and the Inspiration to China [J]. South China finance, 2013(1):52-56.

[15] Chenlin,Yu Mingyang. Empirical Analysis on Influence Factors of Funding Performance of Equity Crowdfunding Projects [J]. Journal of Shandong Agricultural University(Natural Science Edition),2016,(04):623-627.

[16] Jing Haibin. Discussion on Influencing Factors of financing performance of innovative project equity crowdfunding[J]. Modern Economic Information,2016,(14):253-254.

[17] Wu Jianyun. Study on the factors of the financing success of project for equity crowdfunding [D]. Hunan University,2016.

[18] Kang L, Jiang Q, Tan C H. Remarkable advocates: An investigation of geographic distance and social capital for crowdfunding[J]. Information & Management, 2016.

[19] Liu Bin. On Protection of Investors in Equity Crowdfunding:Path, Basis and System Construction [J]. Academic Journal of Zhongzhou,2016,(5):60-66. 2016.05.013.

[20] Hu Yan. An analysis of the location of economic geography [J]. "Zhongshan University graduate journal" (NATURAL SCIENCE EDITION), 1994, (04):81-85.

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