

Which signaling factors facilitate the success probability of equity crowdfunding?

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ABSTRACT

The purpose of this paper is to find out which signaling factors enhance the probability of success in attracting equity crowdfunding. I examined the impact of venture quality (equity to date, debt to date and networks) on funding success. My data highlights that networks can be interpreted as an effective signal and therefore strongly impact the probability of funding success. Equity to date and debt to date have no impact on funding success.

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Keywords

Equity crowdfunding, signaling theory, venture quality, funding success, equity to date, debt to date, networks, UK.

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1. INTRODUCTION

Crowdfunding is a novel method for funding a variety of new ventures, allowing individual founders of for-profit, cultural, or social projects to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries (Mollick, 2014). It is an alternative to traditional venture capital investment for entrepreneurs seeking seed capital (Mollick, 2014). This emerging way of external financing played an important role in access to capital for starting companies and SME's, since they experience more difficulty in funding their business via traditional ways of financing after the credit crunch in 2008 (Douwenkoren.nl, 2015).

Existing literature has examined the different forms and purposes of crowdfunding. There are five different forms of crowdfunding, namely product pre-ordering, profit sharing, equity purchase, loan and donation. According to Belleflamme et al. (2014), pre-ordering and profit sharing are two dominant forms nowadays (Belleflamme, Lambert and Schwiendbacher, 2014). In terms of the purpose, raising money is the main goal, in addition, some founders also use crowdfunding as a marketing tool to generate interest in new projects in the early stages of development (Mollick, 2014). Scholars have also increased their attention on policy makers, regulators, and founders. However, the mechanisms and dynamics of crowdfunding in general, and equity crowdfunding in particular, are not yet well understood (Ahlers et al., 2015).

Differ from other crowdfunding forms, equity crowdfunding is a form of investing that involves many individuals investing online in a business in return for share capital, the way of funding can be through a dedicated equity crowdfunding platform or independently organized by the company itself (British Business Bank, 2015). In order to fund successfully via an equity crowdfunding platform, startups need to find ways to clearly signal their value to small investors (Ahlers et al., 2015). The quality of signaling to the public plays an important role in affecting funders' decision-making process therefore influences project success. Signaling theory (Spence, 1973) has been used in the context of young start-ups toward angel investors or venture capitalists (Mäkelä & Maula, 2006; Schwiendbacher, 2007), to study which types of information (board characteristics, top management team characteristics, gender, the presence of venture capitalists or angel investors, founder involvement, etc.) lead investors to invest in start-ups (Ahlstrom & Bruton, 2006; Coleman & Robb, 2014; Cosh, Cumming, & Hughes, 2009; Jääskeläinen, Maula, & Seppä, 2006; Robb & Robinson, 2014). However little research on the signaling of start-ups in equity crowdfunding context (Agrawal, Catalini, & Goldfarb, 2011; Burtch, Ghose, & Wattal, 2013; Colombo, Franzoni, & Rossi-Lamastra, 2014; Cumming & Johan, 2013; Mollick, 2014; Schwiendbacher & Larralde, 2010) and the nature of how entrepreneurs signal quality, legitimacy, and preparedness is much less defined in the virtual setting of crowdfunding than in traditional new venture settings (Mollick, 2014).

There is one study about signaling on equity crowdfunding based on Australian Market (ASSOB platform) and it examines which crowdfunding project signals and attributes of venture quality are most likely to induce investors to commit financial

resources (Ahlers et al., 2015). My research differs from their institutional background and targets on UK equity crowdfunding market, and collects data via Crowdcube, one of the leading equity crowdfunding platform in the United Kingdom.

The goal of my study is to build up on Mollick's research on project quality and find out which signaling factors would enhance the probability of success in attracting funds on equity crowdfunding. Mollick argue that crowdfunding success appears to be linked to project quality, high quality projects attract backers who may promote the project to other potential backers, or external media, thus increasing the draw of the project (Mollick, 2014). In this paper, project quality is defined as the startup's survival chances and its financial prospects (Baum & Silverman, 2004). Thus my research question is

Which signaling factors enhance the success probability of equity crowdfunding?

The remainder of the paper proceeds as follows. Section 2 provide the literature review on informational asymmetry and impact of signaling on success. In addition the signaling difference of equity crowdfunding and venture capital will be introduced. In section 3, I develop my research hypotheses. Method and data will be introduced in section 4 and 5 respectively. Section 6 shows the bivariate and multivariate analysis. The final section summarize the results, discusses the limitation and conclusion.

2. LITERATURE REVIEW

2.1 Informational asymmetry and Impact of signaling on success

Informational asymmetries refers to the entrepreneurial team that possesses more information about the quality of the technology than any outside investors (Shane and Start, 2002). When there is information asymmetry between a new venture and potential resource providers (Shane, 2000), the new venture's value (or potential value) is often ignored because resource providers have no means to evaluate its quality (Akerlof, 1970). Therefore informational asymmetry is a particular challenge for investors to evaluate the quality of the new venture (Hoenig and Henkel, 2015).

Since the quality of a start-up often cannot be observed directly, venture capitalists have to rely on other sources of information, in particular on observable characteristics of the new venture. In other words observable resources are signals of the start-up's value (Stuart et al., 1999). In equity crowdfunding context, signaling theory applies as well. Previous literatures have focused on signal of project quality and signal of owners' equity commitment. Project quality refers to the likelihood of a startup's survival opportunity and its financial prospects (Baum & Silverman, 2004). Mollick argue that projects that signal a higher quality level is more likely to be funded (Mollick, 2014). Owner's equity commitment is defined as the extent to which that founding team is willing to commit their own money (Bolumole et al., 2014). Equity investments reflect the owners' commitments and can help build credibilities (Hoskisson et al. 2013). Levels of equity financing combined with successful strategic alliances have been found to positively influence

venture performance (Lerner, Shane & Tsai, 2003). Bolumole et al. (2014) argue that the higher the level of equity that is invested by the founding team, the stronger and more positive is the signal sent to receivers thus equity commitment should translate into stronger performance impacts.

For ventures on equity crowdfunding platforms, information asymmetries are comparably higher because gathering information, monitoring progress, and providing input are particularly important for early-stage investors, but the cost of these activities are sensitive to distance (see Agrawal et al, 2011). Ahlers et al., (2015) argue that in order to successfully raise money via an equity crowdfunding platform, start-ups as well as more mature companies will need to find ways to clearly signal their value to small investors. Consequently, I turn to signaling theory to provide an appropriate theoretical framework for this study.

Signaling theory has long been accepted as a legitimate and useful theoretical framework in the fields of organizational behavior, entrepreneurship, financial economics and strategic management (Connelly et al, 2011). There are four major elements in signaling theory: 1) the signaler, defined as the person or entity sending the signal; 2) the actual signal that is sent; 3) the receiver; 4) the feedback provided by receiver to signaler. Signaling theory provides a unique perspective on problems dealing with multiple options selection under conditions of imperfect information (Connelly et al., 2011). One of the goals of signaling theory is to reduce the information asymmetries between signalers and receivers (Spence, 2002) and thereby influence their actions. In other words, the signaler must choose whether and how to best communicate a signal (information), while the receiver must decide how to interpret the signal (Connelly et al., 2011). In this study, I consider the equity crowdfunding entrepreneurs as the signalers and potential investors as receivers.

2.2 Equity crowdfunding signaling differs from venture capital signaling

Equity crowdfunding signaling differs from venture capital signaling to a large extent due to the difference between their type of investors.

In crowdfunding context, small investors are often the primary target of start-ups on equity crowdfunding platforms. The size of the investment on individual equity crowdfunding is relatively smaller than venture capital investments (Belleflamme et al, 2010). Those small investors invest relatively small amount of money and receive a relatively small stake of a company in return (e.g., Malmendier & Shanthikumar, 2007). They are likely to lack the financial sophistication and experience and do not normally have ability to do extensive analysis on the potential investments (Ahlers et al., 2015).

On the other hand, in venture capital context, a large amount of private equity investments is undertaken by professional private equity managers representing large institutional investors such as mutual funds and pension funds (Hillier, 2011). Venture capitalists are generally highly knowledgeable about valuing start-ups and assessing founding teams (Freear, Sohl, & Wetzel, 1994) thus have the capability to do the extensive analysis on the potential investment (Ahlers et al., 2015).

As a results, the way entrepreneurs of, e.g., start-ups would signal to (small) investors is likely to be different from the way

they would signal to angels or venture capitalists (Ahlers et al., 2015)

3. HYPOTHESES DEVELOPMENT

3.1 Project quality as a signal to funding success

Researchers have identified several key quality signals that led to investment in more traditional face-to-face investment settings, including the quality of the preparation demonstrated by aspiring entrepreneurs (Cardon et al., 2009; X.Chen et al., 2009). In crowdfunding context, quality signals are further magnified through a Matthew Effect (Merton, 1957) that multiplies the impact of project quality. Mollick argue that crowdfunding success appears to be linked to project quality. High quality projects attract backers who may promote the project to other potential backers, or external media, thus increasing the draw of the project. Therefore the projects that signal a higher quality level is more likely to be funded (Mollick, 2014). Burtch suggest that the dynamics of crowdfunding may be stable across some contexts and states that founders appear to be attracted to quality projects even in the markets where crowdfunding is driven by altruism (Burtch et al., 2011).

An empirical study from Ahlers et al. (2015) tests the relationship between project quality and funding success on equity crowdfunding. Their paper adopt Baum & Silverman's model and characterize the project quality with three components, namely human capital; social (alliance) Capital and Intellectual capital. Their study support that higher project quality has a positive impact on funding success on equity crowdfunding platforms. However, the test results only show human capital factor has positive impact on funding success on equity crowdfunding platforms, but did not find sufficient evidence on the other two factors based on their data from ASSO platform (Australia).

Mollick assessing crowdfunding project quality by checking whether the project has video and look at spelling errors in project pitches. Network size is also used in his paper as an independent variable to measure venture quality (Mollick, 2014).

In this paper, I select social (alliance) Capital from Baum & Silverman's model as an influence factor on project quality, the reason is that from Ahlers' research, little evidence has been found from this factor but there are sufficient literature support that social capital has positive impact on funding success, thus it is necessary to study social capital factor based on different measurement and data again. My method of measure social capital will be explained in the data section, which differs from Ahlers, who measure social (Alliance) capital by the share of non-executive directors on the venture's board (Ahlers et al., 2015). Furthermore, this paper replaces the other two factors in Baaum & Silverman's model (human capital and intellectual capital) by equity to date and debt to date. The intellectual capital variable is not available in my database, which was measured by granted patent. Factors such as team characteristics and video pitch are variance little in crowdcube platform, in other words, there are no big variance between projects, each project has a video for explaining their projects and the team members are well introduced on the website due to the fact that is required by the crowdcube website.

3.1.1 Equity to date as a signal of venture quality

Bolumole et al. (2014) explore how and why the direct equity investments made by New venture's founding members influence access to external resource such as funding organization and suppliers. Bolumole explains that new ventures are at a strong disadvantage in securing access to external financial resource due to the fact that they are new and their only asset of worth is the highly risk innovation. To remedy this problem, one way to convince these resource providers is for the new venture's team members to take equity positions in the venture (Bolumole et al., 2014).

The author argue that by investing their own money, the founding team is effectively communicating certain messages to the marketplace, suppliers and lenders. Furthermore, founders' equity commitment represent a strong, high quality signal sent by new venture founders to external resource providers. As a result, equity is a strong, high-quality signal in new product development (NPD) context (Bolumole et al., 2014). In addition, Busenitza, Fiet and Moesel (2005) have found that the perceived legitimacy of a new venture is influenced by founder involvement (Busenitza, Fiet, and Moesel, 2005). Previous study from Myers (1984) has explained that new ventures have to show 'good faith' by meeting their funding in a hierarchical manner - by using internal self- equity (the owner's' capital input), before they can borrow from external sources (Myers, 1984). Thus I hypothesize:

H1: There is a positive relationship between the founding team's equity investment and funding success on equity crowdfunding platform.

Equity to date ----- + -----> funding success

3.1.2 Networks as a signal of venture quality

In this research I define networks as the interpersonal and interorganizational relationships that are viewed as the media through which actors gain access to a variety of resources held by other actors. It is a way of measuring the extent of social support from direct contacts (Hoang & Antoncic, 2003).

Ahlers argue that networks and social relationships can provide access to valuable information (Ahlers et al., 2015) . The idea was supported by Granovetter (1973,1983), who believe that the information spread through networks and relationships are tend to be more valuable than information accessed through formal channels, because it is supposedly "more useful, reliable, exclusive, and less redundant" (Brüderl & Preisendörfer, 1998, p. 214). Furthermore, networks and business linkages are believed being an important channels through which firms can access additional, and often complementary, resources (e.g., Baum & Silverman, 2004; Chung, Singh, & Lee, 2000; Hoang & Antoncic, 2003).

Apart from the benefits such as access to potential suppliers and customers, networks can also provide access to financial resources (Brüderl & Preisendörfer, 1998). More importantly, networks may serve as a signal of venture quality (Hoang & Antoncic, 2003; Stuart et al., 1999) due to the fact that networks can enhance a venture's legitimacy (Baum & Silverman, 2004) and reputation. Thus I hypothesize:

H2: There is a positive relationship between the networks and funding success on equity crowdfunding platform.

Networks ----- + -----> Funding success

3.1.3 Debt as a signal of venture quality

The Fundamental of Corporate Finance book introduces the concept of corporate leverage and debt signaling (Hillier, 2011). The author conclude that investors view debt as a signal of firm value, valuable firms issue more debt than less valuable ones and rational investors are likely to infer a higher firm value from a higher debt level (Hillier, 2011). Hiller explains further that a firm with low anticipated profits will probably take on a low level of debt because a small interest deduction is all that is needed to offset all of this firm's pre-tax profits and too much debt would raise the firm's expected distress costs. In contrast, a more successful firm would probably take on more debt. The firm would use the extra interest to reduce the taxes from its greater earning. In other words, rational firms raise debt levels (and the concomitant interest payments) when profits are expected to increase (Hillier, 2011).

There are different voices regarding to this point (the profitability and firm's debt level) among different theoretical literature. Ross argues that firms may signal their level of quality by contracting for more debt instead of equity in a highly competitive setting (Ross, 1977). This signaling perspective can therefore induce the existence of a positive association between leverage and survival in a deregulated context (Kuiate & Noland, 2013). On the other hand, Zingales argue that the debt overhang effect stemming from high leverage negatively affects the ability of existing firms to survive when a regulatory shock occurs in the deregulated context (Zingales, 1998). Furthermore, firms are more likely to reduce their level of leverage (Ovtchinnikov, 2010), this causes the expected costs of financial distress to rise higher and we can expect a negative association between leverage and survival in a deregulated industry (Kuiate & Noland, 2013).

According to the literature review above, it is clear that debt is a signal of firm value, but whether it is a positive or negative signal is not clear in equity crowdfunding context, therefore it increase the necessity of testing this variable on crowdfunding environment. In this study, I hypothesize that:

H3: There is a negative relationship between the debt to date and funding success on equity crowdfunding platform.

Debt to date ----- - -----> Funding success

3.2 Hypothesis Framework

Based on the theoretical and empirical literature review above, I develop a framework that describes the connection between the independent variables and funding success (see Figure 1). I argue that Venture Quality including equity to date, debt to date and networks are the factors signaling the funding success on equity crowdfunding platforms.

Determinants of Funding Success

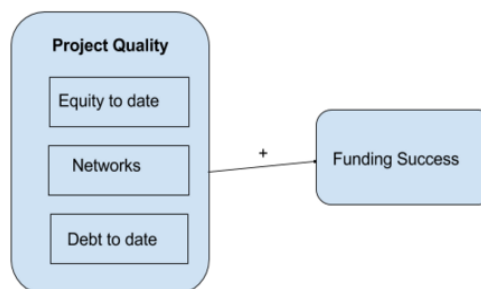


Figure 1. Hypothetical Framework

4. METHOD

I use bivariate and multivariate analysis to test which signaling factors enhance the success probability of equity crowdfunding.

I begin with a bivariate setting. The first dependent variable (fully funded or not) is a dichotomous variable and in a low measurement level, therefore I use independent sample t-test and comparing means to explore whether and how fully funded projects differ from non-fully funded projects in terms of the described attributes of venture quality. After that I move on to multivariate setting. I use Multiple Linear Regression to analyze the correlation among venture quality and dependent variable 2) number of investors, 3) funding amount and 4) finish percentage, due to that fact these three variables are in high measurement level. In addition, I use logit regression for analyze fully funded or not in a multivariate setting. Moreover, I use the target amount (in UK pounds) as a control variable. Mollick argue that failure happen by large amounts, successes by small amounts (Mollick, 2014). Therefore target amount may influence that funding process or related to a venture's future performance.

As a result, my model is shown as follows:

$$\text{Funding Success} = \alpha + \beta_1 * \text{Equity to date} + \beta_2 * \text{Networks} + \beta_3 * \text{Debt to date} + \text{target amount} + \varepsilon$$

In order to test my hypothesis I first define my dependent variables and independent variables and explain how I measure those variables:

Dependent Variables.

The dependent variable explains how I measure success. I partly adopt the method from Ahlers research and differentiate between different success measures (Ahlers et al., 2015).

1) Fully funded. This dichotomous variable (0/1) indicates whether a project has received the full target amount. I use this success indicator to assess whether projects that received full funding generally differ significantly from projects that did not.

2) Number of Investors. This variable counts the number of individual investors that invested in the project (excluding founders).

3) Finish Percentage. This variable measures how much percentage the company got funded compared to their target funding amount. The absolute percentage will be collected.

4) Funding Amount. This variable indicates the total funding amount that was generated by the project in pounds. I transform this variable by using logarithm for the purpose of improving interpretability.

The measuring period in my study is 30 days according to crowdcube funding period rule, more details see section 5.3.

Independent variables.

5) Debt to date: the amount of debt has been invested to the company when the time it launched on crowdcube. I scaled this variable by the target amount, which is measured as debt to date divided by the target amount.

6) Equity to date: the amount of equity has been invested to the company when the time it was launched on crowdcube. This

variable also scaled by the target amount, which is measured as equity to date divided by the target amount.

7) Networks. Measured by the total number of shares among Facebook, twitter and LinkedIn.

Control variable.

Target amount: the amount of money (in pounds) that the company wants to raise through crowdcube platform.

5. DATA SAMPLE

5.1 An Overview of the Equity Crowdfunding in UK

Equity crowdfunding as a concept first developed in the US in the mid-2000s, and took off in the UK in 2011 with the launch of Crowdcube (British Business Bank, 2015). The number of deals and the investment total has raised a lot from 2011 to 2014 in UK. In 2011, there were only 7 deals with £1.6m recorded. According to Beauhurst data, in the first half of 2014, the amount has increased to £24m and the deals number raised to 10. This is equivalent to 18% of total visible deals and 2% of total visible investment (British Business Bank, 2015).

However, compared with peer-to-peer lending, equity crowdfunding is still small according to Nesta Report. Nesta (Understanding Alternative Finance) finds that £193m was invested through peer-to-peer business lending, whereas the amount invested on equity crowdfunding according to Beauhurst data is only £19.5m (British Business Bank, 2015).

5.2 The Crowdcube Platform

Crowdcube is one of the leading equity crowdfunding platforms in UK. It allows investors to buy share of a business in the hope that the value of that company will increase over time. When the business value grows and investors sell their share then they get return and profit from their investment. Once investors as a member of Crowdcube, they can peruse the general information on the offering. This includes pitch video, view copies of relevant documents, request copy of the business plan or directly ask question in the discussion page. The firms on crowdcube platform are small or medium-sized businesses (SMEs). The offering documents are prepared by the entrepreneurs and are following a similar structure : 1) pitch video 2) The idea of the business 3) The market analysis 3) The People 4) The Financials 5) The Exit Strategy 6) Rewards 7) The share type 8) Number of shares in Facebook, twitter and LinkedIn.

5.3 Data Set Construction

The final sample consists of 50 equity crowdfunding offering published on Crowdcube in 2015 (January till 16th Oct). There are many successful projects for the year 2015 on the platform for the marketing purpose, but no failed data published online. Therefore I start to collect failed cases from 1st of September, 2015. According to the rule of crowdcube, each Pitch has 30 days to raise the Target Amount. However, in some circumstance the pitch may be extended for a further period of time for a rising under the discussion with crowdcube. In this paper, I use 30 days to judge funding status, if the project failed to raise its target amount by the deadline (from the day it launched to crowdcube till 30 days after), it will be considered as a failed funded case.

For my sample of 50 offerings, I collected six types of data: 1) networks 2) equity amount to date, 3) debt to date, 4) number of investors, 5) absolute raised amount, 6) finish percentage of the target amount. The descriptive statistics for all variables and the correlation matrix are in Table 1 and 2, respectively.

6. RESULTS

6.1 Descriptive Statistics

	Number of observation	Mean	SD	Min	Max
Fully funded or not	50	0.66	0.4785	0	1
Number of investors	50	246.12	390.33	20	2377
Funding amount	50	473976	613398	6560	3418730
Finish percentage	47	119.7%	64%	1%	342%
Equity to date	50	619903	1604955	0	9300000
Debt to date	50	231807	679691	0	4100000
FB	49	103.8	107.29	0	508
Twitter	50	66.12	70.07	0	249
Linkedin	49	110.78	125.4	0	706
Networks	49	276.02	241.72	3	1125
Target amount	50	373738	328993	50000	2000000
Equity/Target amount	50	1031	1791	0	9000
Debt/Target amount	50	523	1326	0	8200

Notes: This table shows the mean, standard deviation (SD), minimum value (min), and maximum value (max) for all variables. The sample covers 50 equity crowdfunding projects.

Table 1. Descriptive Statistics

From the descriptive table we can see that the maximum number of investors reach to 2377 people, in contrast the minimum number of investors are only 20 people, the big difference increase the curiosity of what signaling factors making those projects attract so many investors? Next I compare the absolute funding amount and target amount, the table shows that both the mean and maximum of funding amount are exceed the target, which indicate that some projects are overfunded. The same results can also be seen from the mean of finishing percentage, which is more than 100%. I also find that in average, equity to date are about two times larger than debt to date. Some companies has neither equity nor debt. In terms of the sharing among social media, the table shows that number of sharing in LinkedIn tends to be higher than Facebook and twitter.

6.2 Bivariate analysis

Correlation Matrix

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(2)Number of investors	1								
(3)Finish percentage	0.712**	1							
(4)Funding amount	0.92**	0.674**	1						
(5)Debt/Target amount	-0.059	-0.033	-0.008	1					
(6)Equity/Target amount	-0.074	-0.812	-0.143	0.587**	1				
(7)FB sharing	0.469**	0.445**	0.578**	-0.136	-0.224	1			
(8)Twitter	0.375*	0.315*	0.295*	-0.156	0.138	0.522**	1		
(9)Linkedin	0.667**	0.449**	0.675**	0.007	-0.01	0.493**	0.309*	1	
(10)Networks	0.665**	0.522**	0.705**	-0.095	-0.141	0.846**	0.687**	0.837**	1

Notes: This table show the Pearson correlation coefficients for the variable in Table 1 — p-values are given in parentheses below the coefficients. ** and * indicate statistical significance at the 0.01 level and 0.05 level (2-tailed). Variable funding amount; debt to date and equity to date are transformed by logarithm.

Table 2.

The correlation matrix show some interesting findings. First, I find that Facebook, Twitter and LinkedIn are interrelated. Sharing on LinkedIn and twitter has strong influence on sharing on Facebook. Second, network size is indeed a signaling factor and it is statistically significant on number of investors, finishing percentage and funding amount. In more details, Facebook and LinkedIn has equally strong influence on all three measurement of success, however, twitter has less impact on number of investors, finish percentage and funding amount. Third, I did not find evidence on debt to date on number of investors, finish percentage and funding amount, neither does equity to date.

Mean Difference Between Fully Funded and not Fully Funded Projects

	Number of observations	Fully funded (mean)	Not fully funded (mean)	Mean Difference (fully funded vs. not fully funded)
Networks	49	348.75	139.12	-209.63**
Equity/Target amount	50	891.92	1301.7	409.77
Debt/Target amount	50	456.25	652.35	196.1

Notes: This table presents the comparison of mean test for the fully crowdfunded investment projects (fully funded, 33 projects) and partially or not funded investment projects (not fully funded, 17 projects). The sample covers 50 equity crowdfunded projects. The variable Equity to date and debt to date are transformed into log10. ** and * indicate statistical significance at the 0.01 level and 0.05 level. The Independent variable is dichotomous (funded or not funded), the dependent variables are equity to date, debt to date and networks respectively. Equity to date is scaled by target amount, which is measured as equity to date divided by target amount. Debt to date is scaled by target amount, which is measured as debt to date divided by target amount.

Table 3.

Table 3 deals with the dichotomous dependent variable 'fully funded or not'. It shows that the mean difference between fully funded and not fully funded projects in terms of variable equity to date and debt to date are not statistically significant, their P-value are larger than 0,05 (my chosen α level). Therefore I find no initial support for rejecting that there is no significant difference between fully funded and not fully funded project in terms of equity to date and debt to date in equity crowdfunding.

However, I do find statistically significant mean difference between fully funded and not fully funded projects in terms of variable network size (P-value is 0 which is lower than 0.05), which indicates that there might be strong correlation between networks and equity crowdfunding success and network size might be an signaling factor.

6.3 Multivariate Analysis

I now use Multiple Linear Regression to analyze the association among project quality and other three success measurement factors (number of investors, absolute funding amount and finishing percentage). Logit Regression will be used for dichotomous dependent variable fully funded or not. All the results are presented in Table 4 in models 1-4. It allows a comparison of the results from the four different success measures more easily, because results are presented side by side and the same dependent variables are used.

Success Determinants of Equity Crowdfunding Projects

	Model 1: Number of investors	Model 2: Funding Amount	Model 3: Finish Percentage	Model 4: Fully funded or not
	Coefficients	Coefficients	Coefficients	Coefficients
Constant	-56.656	-745,589	82,007**	-0.962
Networks	1.089**	1788.8**	0.134**	0.008**
Equity/Target amount	0.006	-40.804	-0.006	0
Debt/Target amount	-0.004	57.274	0.007	0
R square	0.406	0.477	0.244	0.323

Notes: The success determinant analyzed in Model 1, 2 and 3 are using multiple linear regression model, measured by the number of investors, funding amount and finish percentage respectively. Model 4 using logit regression model, measured by fully funded or not. The sample covers 50 crowdfunding projects. ** and * indicate statistical significance at the 0.01 level and 0.05 level respectively. Equity to date is scaled by target amount, which is measured as equity to date divided by target amount. Debt to date is scaled by target amount, which is measured as debt to date divided by target amount.

Table 4.

Model 1 investigates what are the signaling factors to number of investors. Table 4 shows networks is statistically significant to dependent variable number of investors. In more detailed, if a firm keep equity to date and debt to date being constant, increase one unit of its networks, the marginal increase of number of investors will be 1.089. However, I did not find statistically significance between independent variables equity to date and debt to date towards number of investors.

Model 2 tests which factors are signaling to the funding amount. Table 4 shows networks is statistically significant to funding amount. If a firm keep equity to date and debt to date being constant, increase one unit of its networks, the marginal increase of number of funding amount will be 1788.8. However, I did not find statistically significance between equity to date and debt to date towards funding amount.

Model 3 support the results from Model 1 and 2, this model measure the correlation between finish percentage and project quality. As shown in the table, networks is statistically significant to finish percentage. If a firm keep equity to date and debt to date being constant, increase one unit of its networks, the marginal increase of finish percentage will be 0.134. Furthermore, I did not find statistically significance of equity to date and debt to date on finish percentage.

Model 4 differ from previous models, I use logit regression analysis instead of multiple linear regression analysis due to the fact the fully funded or not is a dichotomous variable. The model support my second hypothesis and shows a statistically significance on networks and fully funded or not. In more detailed, if a firm keep equity to date and debt to date being constant, increase one unit of its networks, the marginal increase of number of investors will be 0.008. However, I did not find statistically significance between independent variables equity to date and debt to date towards fully funded or not.

Using deductive method from all four different models, I find that network size is statistically significant in all success measurement methods. This finding is different from Ahlers' results. Based on their data from ASSOB platform (Australia), they did not find sufficient evidence on social capital and funding success. A possible explanation for this difference could be that our way of measuring networks are different. They measure networks by the share of non-executive directors on the venture's board, instead, I measure networks by the total number of shares in Facebook, twitter and LinkedIn. Furthermore, the nature difference of our data could also a reason for the different results (Ahlers et al., 2015).

In order to test the robustness of my analysis, an alternative analysis has been done by transform equity to date and debt to date into logarithm. Following the same methods (bivariate analysis and multivariate analysis), the results show that Log Debt to date is statistically significant to funding amount (Model 2) and Finish Percentage (Model 3), which is different from the previous test that transforms equity to date and debt to date by target amount.

7. CONCLUSION

This paper focus on equity crowdfunding context with the goal of finding out what signaling factors would enhance the probability of success in attracting funding on equity crowdfunding. I examine the impact of venture quality (equity to date, debt to date and networks) on funding success. The data consist of 50 equity crowdfunding projects in 2015 on crowdcube platform (United Kingdom). I use bivariate and multivariate method for testing effect of equity to date, debt to date and networks on equity crowdfunding success. In order to measure funding success, four different parallel methods were applied, from which the conclusion can be deducted by comparing all the success measurements.

To make a conclusion it is important to rethink about the hypothesis and check whether it was accepted or declined.

Hypothesis 1: There is a positive relationship between the founding team's equity investment and funding success on equity crowdfunding platform.

From both bivariate and multivariate analysis I find no statistically significance of equity to date on fully funded or not. Further look at multivariate analysis, there are none of the model shows the equity to date has impact on funding success (all four measurement). Therefore the hypothesis cannot be accepted.

Hypothesis 2: There is a positive relationship between networks and funding success on equity crowdfunding platform.

Networks was calculated by the total number of shares among Facebook, twitter and LinkedIn. Both bivariate and multivariate analysis shows that networks has strong impact on funding success (all four measurements). Therefore the hypothesis can be accepted and I conclude that networks is indeed a signal factor on equity funding success. Furthermore, my data also shows that Facebook, twitter and LinkedIn are interrelated. Number of shares on LinkedIn and twitter has strong influence on number of shares on Facebook. However twitter has less impact on number of investors, finish percentage and funding amount comparing with Facebook and LinkedIn. The practical implications to entrepreneurs might be that more attention needs to be paid on Facebook and LinkedIn.

Hypothesis 3: There is a negative relationship between the debt to date and funding success on equity crowdfunding platform.

The bivariate analysis finds no impact on debt to date on all funding success measurements. The same results shown in multivariate analysis as well. There is no statistically significance of debt to date on all four success measurements. Therefore the hypothesis cannot be accepted.

In summary I find strong evidence that networks is an effective signal to finding success. No impact was found of equity to date and debt to date on funding success.

8. LIMITATION AND RESEARCH RECOMMENDATIONS

There are several limitations on my study. Firstly, my sample size is not large enough due to the time limitation of data collecting. The database only consists of 33 successful projects and 17 failed projects. The small sample size might cause large sample variance. Future research may collect more data and using the same method test on a larger data sample. Secondly, my data are all collected from United Kingdom. Changing a country might lead to different results. Further study may test the same dependent variables and independent variables based on different country context. Furthermore, few previous literature have studied the impact on number of equity issued by entrepreneurs and type of shares the company issuing on platform (A shares, B shares), those could also be interesting for future study on equity crowdfunding context.

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I hope one would enjoy while reading this thesis.

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