The effect of investor communication on the success of a crowdfunding campaign

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Abstract:

In this study I have researched the effect of investor on the successfulness of the crowdfunding campaign. The research is focused on the 93 projects of Oneplanetcrowd that deal with debt-based or equity-based crowdfunding. The projects on Oneplanetcrowd all deal to some extent with sustainability or societal improvement. Based on these results I have found evidence that providing on-platform updates helps increasing the success of a crowdfunding campaign. In this study I have found no evidence that supports the claim that social media updates is positively correlated to the success of the campaign.

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1. INTRODUCTION

Crowdfunding in the Netherlands provides a realistic new option of alternative financing of firms and lending out resources for a benefit. The amount of funders and funded ventures are growing exponentially, with the value of crowdfunding in the Netherlands doubling annually from 2011 to 2015 (Koren, 2018). And although even the European Union sees a future in crowdfunding (Kristof de Buysere, 2012), the research regarding crowdfunding, especially equity-based and debt-based crowdfunding is still very limited. Or as Gerber and Hui (2013) put it 'despite the rapid growth of the online community of creators and supporters linked by crowdfunding platforms, our understanding of this new social phenomenon is limited. Research also demonstrated that within crowdfunding there are high chances of information asymmetries, for example entrepreneurs can provide the platform with details about their organization that favor their chances of getting funded, even though in reality this information might be false or overvalued. If the project is backed and funded the entrepreneur might engage in moral hazardous behavior due to a lack of control and regulation. The vendor could put an end to their online activities and disappear more easily because of the little physical offline control. (P. Belleflamme, Lambert, & Schwienbacher, 2014; Courtney, Dutta, & Li, 2017; Schwienbacher & Larralde, 2010) For investors it appeared to be important to communicate and establish trust with a project before investing (Thomas, Zolin, & Hartman, 2009). More effective investor communication may be the solution. (Beier & Wagner, 2015)

For entrepreneurs there is very little scientific basis to which they can reflect their crowdfunding campaigns and improve upon them. In this paper I will attempt to clarify the correlations between effective investor communication (i.e. via the crowdfunding platform as well as via social media) and the successfulness of a crowdfunding campaign. In this research successful crowdfunding projects are seen creators of economic value by providing access to monetary resources (Lehner, 2013), but other forms of crowdfunding coexists. In these other forms (e.g. reward-based or donation-based) the reward for the funders can be a product that they paid for in advance or solely the success of the capital seeking organization.

There are four main crowdfunding options; the first is equity-based, in this option the crowdfunder provides money in return for a piece of the company (e.g. in stock or a convertible loan). Then there is debt-based, this form crowdfunding is fairly straight forward too, the funder provides money and the new venture will pay back this loan as it would if it were to use traditional financing with a venture capitalist or a bank. Then there are two types of crowdfunding that make crowdfunding even more innovative; reward-based and donation-based. The donation based funding is a way to reach many people that stand for something communal and because the visibility of the venture the idea has come to light and the donators will donate. In return the crowd hopes to realize the goal for the venture and asks nothing in return. Lastly, there is reward-based crowdfunding. Within this form the reward is not a money-back policy, but often a product or service. One could provide money to a new venture who wants to produce a new tool, and in return the investors receive this tool when actually produced (P. Belleflamme et al., 2014; Schwienbacher & Larralde, 2010) In this research I will focus on equity- and debt-based crowdfunding.

To elaborate on the growing importance of acknowledging crowdfunding, in 2017 research from Gijs Koren ('*Crowdfundingcijfers.nl'*) demonstrates that the total value and amount of funded projects has increased compared to 2016, these increased with 31% and 10.42%, respectively. Crowdfunding provided 223 million euros in the Netherlands in 2017, for 5800 projects. Over the last 10 years thousands of projects have been funded. These projects might not have been funded through traditional financing methods, this is one of the main benefits of using the power of crowdfunding (Valanciene & Jegeleviciute, 2013). Signori and Vismara (2017) found that 18% of the equity-based crowdfunded projects that were successful in the period 2011-2015 failed by the time of their research. They also conclude that a prospect of return for investors does exists when engaging in equity-based crowdfunding. This may imply that an even bigger and brighter future for crowdfunding is a possibility, one in which it grows and is accepted as standard financing method. The more reason to investigate success factors of a campaign. As said, this paper focuses on the investor communications that new vendors can engage in to reach, and to build solid professional with their backers.

According to (Moritz & Block, 2014) personal factors such as sympathy, openness and trustworthiness reduce the perceived information asymmetries of investors in equity-based crowdfunding, their research is limited to crowdfunding in Switzerland. 'Investor communication, often referred to as investor relations, is understood as the disclosure of financial and non-financial historic, current, and future information about a company through different media to establish or maintain relationships with prospective and present investors, analysts, and stakeholders' (Dolphin, 2004; Hoffmann & Fieseler, 2012). A limitation to (equity-based) crowdfunding, however, is that the new ventures are faced with a large group of heterogeneous and often anonymous investors who typically do not have the resources and expertise to evaluate the risks of investment proposals in detail (Kim & Viswanathan, 2014; E. R. Mollick, 2013).

This report will be connecting several aspects of investor communication whilst executing a crowdfunding campaign. These aspects will include; project-updates provided on the crowdfunding platform itself, and their social media usage. The amount of updates on both the platform and the social media channels will be looked at, as well as the success of the campaign. These factors were chosen because these channels are provided to all entrepreneurs who seek capital financing through crowdfunding, and could make use of these. It can therefore be seen as an variable that is not influenced by the entrepreneurs accessibility to the channels, but merely as ignorance or deniability of the possible effects of investor communication. This brings me to my research question:

What is the effect of investor communication, via on-platform updates as well as via social media channels on the success of the campaign in equity- or debt-based crowdfunding in the Netherlands?

2. LITERATURE REVIEW

In this section the theoretical framework is provided for the variables to clarify them and the development they went through since the beginning of crowdfunding. In these sub-sections the hypotheses follow logically from the definitions. Their relationship to the successfulness of the campaign (independent variable) is also explained.

2.1 Investor communication

For start-ups and scale-ups it tends to be difficult to find financing through traditional financing ways (Kerr & Nanda, 2009; Sarkar, 2016; Wadhwa, Holly, Aggarwal, & Salkever, 2009). Traditional financing forms tend to provide bigger sums of funding, therefore also putting more money at risk in case of a failed start-up. (Bruton, Khavul, Siegel, & Wright, 2015; Hemer, 2011) Shane and Cable (2002) found that when little (private) information is known about a project or start-up that an investor is more inclined to invest based on social ties, however when the information is publicly communicated the investment decision is not based on the social link between the VC and an entrepreneur. This suggests that 'reputation mediates the effects of social ties, and investment decisions are not made based on social obligations' (p.377). The findings of Shane and Cable (2002) also show a new perspective on the results of Fried and Hisrich (1994) in which they found that VC's rarely invest in opportunities that lack introduction and are more inclined to invest in referred cases (p.31). Shane and Cable found however, that social ties, such as due to referral, are not a driver of investment, but merely a mean to receive information.

Crowdfunding has been found to be a solution for entrepreneurs to achieve their required funding (P. Belleflamme et al., 2014; Pazowski & Czudec, 2014; Schwienbacher & Larralde, 2010). By acquiring this still relatively new way of funding, which means that instead one or a few investors are engaged in the firm, a whole 'crowd' of investors are backing the firm and are inclined to make a profit on their smaller investment.

Not only is the crowd different from traditional funders, the crowd itself consists of heterogeneous and often anonymous people with different motives (Heminway, 2014; Lin, Boh, & Goh, 2014; Moritz, Block, & Lutz, 2015; Ordanini, Miceli, Pizzetti, & Parasuraman, 2011) found that efficient communication, networking, and interaction (online) with potential funders are considered crucial elements of a crowdfunding project. Communication with potential investors is, as mentioned, a crucial element for a crowdfunding campaign, but due to the heterogeneity of the crowd different information needs are thriving, and should be considered by project owners (Cholakova & Clarysse, 2015; Gerber, Hui, & Kuo, 2012; Ordanini et al., 2011).

The online aspect of crowdfunding also means that the funders can be more geographically dispersed, or as A. Agrawal, Catalini, and Goldfarb (2015) put it 'crowdfunding platforms reduce market frictions associated with geographic distance'. (p.255) A. K. Agrawal, Catalini, and Goldfarb (2011) also mentioned 'the broad geographic dispersion of investors to perhaps be the most striking feature'. To handle the greater geographic dispersion of the (potential) funders entrepreneurs need to think about ways to provide personal communication via new ways, also called pseudo-personal forms of communication (e.g. videos or social media messaging). (Moritz et al., 2015) Dholakia, Herzenstein, and Sonenshein (2011) describe the effect of creating an identity on the success of the crowdfunding campaign. They describe how identities focused on trustworthiness and successfulness positively relate to loan funding received, whereas these identities are poor predictors regarding the entrepreneur paying back the loan. Burtch, Kunz, and Obal (2011) found that 'although communicating via social networking sites can help communicating the benefits of products and brands, the effectiveness of the product/brand messenger will be determined by the product type and the expertise of the messenger, and the similarity of the messenger to the consumer' (p.43). Ramachandran and Ward (2010) found that posting more blogs on the project increases the needed funding drive momentum and helps in reaching their goal.

2.1.1 Amount of project updates

All entrepreneurial financing relationships, including venture capital financing, are affected by large information asymmetries between the investor and the entrepreneur, and by moral hazard problems (Denis, 2004; Duffner, Schmid, & Zimmermann, 2009; Gompers & Lerner, 1999). To counter moral hazard in traditional financing forms investors can put up contracts to ensure certain behavior from entrepreneurs, as well as provide incentives that align goals between the two parties (Eisenhardt, 1989; Holmstrom & Milgrom, 1991; Laffont & Martimort, 2009). However in crowdfunding these are more difficult or impossible to include in the campaign. The screening of the projects by the platform is therefore incredibly important.

In traditional financing trust between new vendors and investors is an element that influences the chance of receiving financing too. Many economists have intuitively recognized the importance of trust for [any] economic transaction (Bottazzi, Da Rin, & Hellmann, 2016). Arrow (1973) mentioned that 'virtually every commercial transaction has within itself an element of trust'. In an even bigger context Knack and Zak (2003) name that sufficient interpersonal trust is fundamentally necessary to gain economic development and growth. Also in crowdfunding this seems to be the case, (Moritz et al., 2015) 'found that borrowers who appear more trustworthy [by providing voluntary information about themselves or the funding request] tend to have a higher funding probability and lower interest rates'. (p.7)

Beier and Wagner (2015) and (E. Mollick, 2014) found a positive relationship between higher frequency of project updates and successfulness of different forms of crowdfunding projects. I therefore hypothesize that

H1: The amount of investor communication (i.e. project-updates) is positively related to the successfulness of a crowdfunding campaign.

2.2 Social media usage

As mentioned in 3.1 Investor communication, due to the large scale of investors needed to successfully fund a project and due to their geographical dispersity pseudo-personal forms of communications are brought into play. Vendors can reach their potential investors through the crowdfunding platform itself, but can also, next to the platform communications, make use of social media channels.

Blackshaw (2004) described social media or 'consumer-generated media', as they called it, a variety of new and emerging sources of online information that are created, initiated, circulated and used by consumers intent on educating each other about products, brands, services, personalities and issues. (p.2)

Obar and Wildman (2015) added to this that there are various differences between social media and earlier of forms of communication such as phones or e-mail. The first difference they name is that 'the technologies that make social media possible are flexible, general-purpose technologies that can support many different types of social media services'. (p.15)

the second difference they mention is that 'social media services enable new forms of socialization that, when successful, can become integral to the daily lives of millions of people'. (p.16)

Social media channels appear to be ever as popular with the user total of social media amounting to almost 3.3 billion worldwide in the first quartile of 2018, an increase of more than 100 million users in the first quartile of 2018 according to the figures of TheNextWeb (Kemp, 2018). The amount of new mobile phone users grew even more, with 389 million new mobile users in the first three months of 2018. So apparently although concerns around privacy breaches the amount of users is still growing. This seems to be in favor of entrepreneurs using the networks.

In the Netherlands *Newcom Research & Consultancy B.V.*, conducted a national research on social media. In this research it was found that the social media usage in the Netherlands is still growing, with WhatsApp and Facebook as the biggest ones. Facebook is, however, facing a decline of users in the ages 15 to 19, whilst the other age groups are not growing either. Instagram and Snapchat respectively are rising the most, especially for the users under 20 years (Van der Veer, 2018) . For entrepreneurs, Facebook still appears to be a platform where the vendors can target their potential investors in equity- and debt-based crowdfunding. Baeck, Collins, and Zhang (2014) found that the average age of funders in equity-based crowdfunding campaigns in the UK exists for 61% out of funders between the age of 35 and 55+, as can be seen in figure 1 'Funders age by model 2014 vs 2016'(Zhang et al., 2017). For debt-based (peer-to-peer consumer and business lending) crowdfunding this age-group dominates the market even up to 88%. In these age groups the Facebook user amount in the Netherlands is ranging from 69% (aged: 65-79) to 77% (aged: 40-64) and the age group 20-39 is represented with 89% on Facebook based on the figures of *Newcom Research & Consultancy B.V.*.

The basic assumption is that social media help project creators to establish new contacts (Beier & Wagner, 2015). Prior research has established that social media usage contributes to crowdfunding success (e.g. 'usage of Twitter') (Cui, Zhang, Liu, Ma, & Zhang, 2012) and also the size of the project creators' online social networks, such as the number of Facebook friends, positively correlates with the success of crowdfunding projects. (Borst, Moser, & Ferguson, 2018; E. Mollick, 2014; Zheng, Li, Wu, & Xu, 2014)

In this research I will split up the usage of social media, in amount of social media channels and the amount of social media updates.

2.2.1 Amount of social media updates

The crowd that is interested in funding through online platforms have preferences for innovative behavior and the willingness to engage in usage of tools such as social media (Ordanini et al., 2011). According to many writers (Frydrych, Bock, Kinder, & Koeck, 2014; Moritz et al., 2015; Parhankangas & Ehrlich, 2014) due to the investment opportunities and the characteristics of the crowd problems with communicating their credibility arise. With the basic assumption of Beier and Wagner (2015) in mind (i.e. social media help project creators to establish new contacts and contribute to more successful campaigns) I am interested to see what the correlation is of the amount of social media updates. It would be logical that more updates would mean more visibility and therefore more new contacts, and also more credibility. Therefore I hypothesize that:

H2: The amount of social media updates provided by the capital seeking firm is positively related to the successfulness of the crowdfunding campaign.

2.2.2 Amount of social media channels

Next to the amount of social media updates one could argue that it would make sense to advertise via more social media channels as different websites attract different target groups. To attract interest from youth it would make sense to use Instagram or Snapchat advertisements instead of Facebook (Oosterveer, 2018), as the people aged 15-19 are pulling away from Facebooks network. According to Skeels and Grudin (2009) LinkedIn focuses on professional information, encouraging users to construct an abbreviated CV and to establish "connections." The profiles are bound to be professional instead of solely personal. It aims to be a more formal platform on which business relations can find each other. Its users are therefore different than Facebook's. It would make sense that reaching out to more varying target groups and a larger audience increases your chances of success. This causes me to hypothesize that:

H3: The amount of media channels used by the capital seeking firm is positively related to the successfulness of the crowdfunding campaign.

3. METHODOLOGY

3.1 Research design

3.1.1 Setting

This study is based on a cross-sectional design with data retrieved from one crowdfunding platform; Oneplanetcrowd. From the projects that were analyzed data regarding their on-platform and off-platform social media activity was collected. After confirming linearity, multiple linear regressions were conducted. Oneplanetcrowd posts the ending date of a project online, only the updates from that date or prior to that date and that explicitly named the campaign were counted. The starting date of the campaign was not taken into consideration as updates, that alerted potential investors that the campaign would start in a foreseeable future, could motivate them into investing at a later time.

3.1.2 Sample

The research question answered in this research is: How can a new venture, that seeks capital via equity- or debt-based crowdfunding in the Netherlands, best apply investor communication to reach their crowdfunding campaign target? Oneplanetcrowd hosted 94 projects, that dealt with debt-based or equity-based crowdfunding, in the sample period of 2013-june 2018. The projects that deal only with donation-based or reward-based crowdfunding are not included in this study. From these 94 projects 1 firm deleted all social media channels and its website after going bankrupt in November 2017, therefore this project is excluded from this study, making the valid N 93.

Oneplanetcrowd is the tenth biggest crowdfunding platform in the Netherlands, lending out €9.330.300 up until the first of May 2018 (Koren, 2018). This platform focuses on 'crowdfunding for entrepreneurs and investors that want to contribute to positive change'. All projects try to more or less provide societal, sustainable or environmental solutions for the world. On the platform there are various funding forms for investors and entrepreneurs to choose from. These are: Donation-based (*donatie*), reward-based (*voorverkoop*), debt-based (*Lening*), or equity-based (*converteerbare lening*). In this report I have selected only the 93 projects that are (partially) funded by loans or equity (convertible loans). My study sample spans the period 2013-2018. From the 93 projects 6 projects had

missing values on their Facebook updates. This is differing from not updating on the platform, these accounts were deleted or hacked or in some other form affected which made it impossible to retrieve posts from their campaign period.

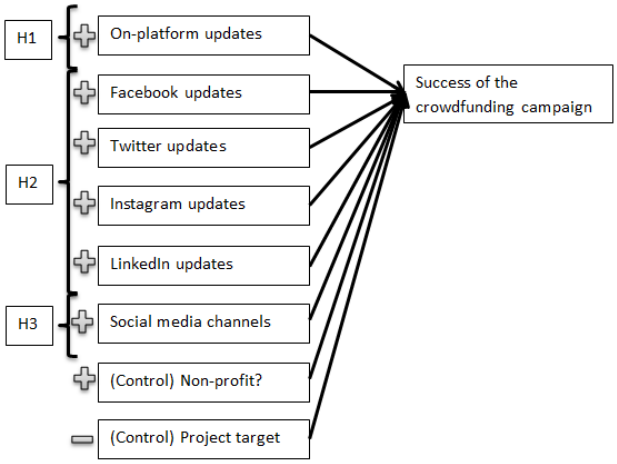
In the period 2013-2018 crowdfunding has become more popular and takes a more prominent role in the financing sector. To check if crowdfunding projects become more successful through the years a one-way ANOVA has been conducted, this showed to be insignificant with p=.414. Therefore it is safe to say that the mean success is not significantly different between any of the years. The sample period is thereby justified.

3.2 Conceptual model

This study is based on the model standing below (Figure 1: 'Conceptual model'). It is consistent with previous cross-sectional research. (Borst et al., 2018; Koch & Siering, 2015)

$$Success=(Constant+\beta 1Platform\_updates+\beta 2Media\_channels+\beta 3FB\_updates+\beta 4TW\_updates+\beta 5IG\_updates+\beta 6LIn\_updates+\beta 7Non\_profit-\beta 8Project\_Target+\varepsilon)$$

Figure 1: 'Conceptual model'



3.3 Dependent variable

The dependent variable in this research in the success of the crowdfunding campaign. The success of the campaign could be seen as a dummy variable in which reaching the funding target is a success and everything below that target is a failure, however from the 93 projects that have been researched only 12 have failed in reaching their target. 81 have therefore been successful in the sense that they reached their previously set target. On the platform an investor can see the funding percentage set out against the set target, this percentage can also surpass the 100% mark. As the project only receives the funded money if the project is successful the entrepreneurs are motivated to reach this target per definition. This could also mean that the entrepreneur would lower the target to ensure to receive at least that lower amount of money, especially as the target can also be funded beyond the target (the most successful project reached 855%). Therefore I have chosen to see the success of a project as a percentage of the funding target as a scale variable, in which a higher percentage means more success than a lower one.

3.4 Independent variables

The independent variables researched are the amount of on-platform updates, Facebook updates, Twitter updates, Instagram updates and LinkedIn updates, also the amount of social media channels used to reach potential investor groups are counted. These variables were counted and noted in SPSS, where a dataset is made to conduct an ordinary least regression.

3.4.1 On-platform updates

The on-platform updates were counted, these updates are on the projects' page itself and did not necessarily have to be about the campaign, but could also thank or motivate investors. These were also manually checked for errors, as sometimes the same posts were uploaded twice, this would influence the sample.

3.4.2 Social media updates (FB, TW, IG, L)

I searched for the social media updates on the firm's social media pages manually and counted the updates on the campaign whilst it was running. I counted only the updates that had a direct link to the crowdfunding page, this to minimize interpretation errors and to keep chances alike between for example fashion companies, which post updates every day about their clothing and a farmer that would not post normally. The posts from Oneplanetcrowd's social media were only counted in the sample if these were retweeted or shared on the firm's page by the project initiators, this to only count updates for which the entrepreneurs had to take any action themselves.

It became apparent during the data collection phase that the social media channels: Instagram and LinkedIn are still only barely used to provide updates on crowdfunding campaigns. In this study it became apparent that Facebook is used by most entrepreneurs 74.7%, Twitter is used by 62.4% of the founders. However, if Twitter is used to promote a campaign the mean updates is higher than on Facebook (i.e. 8.89 Tweets versus 5.83 FB posts per project).

3.4.3 Social media channels

The amount of channels used is also counted to see which are used most often and are most effective in reaching the crowd, that is willing and capable of investing in the project. I counted posts on Facebook, Twitter, Instagram and LinkedIn on content that promoted the crowdfunding campaign. A social media channel is counted as 'used' if the firm posted at least 1 message on its own social media page.

3.5 Control variables

To control the sample of projects to some extent, two control variables are added to the model. These are the pledged project target and whether the project is founded for profit or for a non-profit purpose.

3.5.1 Project target

Prior research shows that the project target set-out for a crowdfunding campaign is negatively correlated to the success of the campaign (Cordova, Dolci, & Gianfrate, 2015; Crosetto & Regner, 2014). To account for this the project targets for all 93 projects have been noted, the mean project target was €152,693.55 with a minimum of €10,000 and a maximum of €1,000,000. One can expect that it is harder to acquire a target of a million euro's compared to one that is ten thousand euro's. To account for the relatively high mean, and standard deviation a logarithmic transformation was done, this made it possible to see significance and the unstandardized coefficients.

3.5.2 Non-profit projects

Research from Paul Belleflamme, Lambert, and Schwienbacher (2013) made clear that non-profit projects had a higher chance of getting funded compared to profitable projects, this is in line with theoretical arguments developed by the contract failure literature which postulates that nonprofit organizations may find it easier to attract money for initiatives that are of interest for the general community due to their reduced focus on profits. (Glaeser & Shleifer, 2001) The general assumption is that because the founders are not focused on making money

themselves that they give more priority to paying back their funders investments. This makes it for funders more interesting to invest in non-profit organizations.

4. RESULTS

In Table 1 an overview can be found about the facts and figures of the crowdfunding platform Oneplanetcrowd, as well as the descriptive statistics on the independent variables. It shows the means and standard deviations of several variables that can be found on the website. Compared to other crowdfunding platforms the mean success percentage and mean success are relatively high, as prior research showed that the percentage of successful projects lies between 30% and 70% on different websites. It has to be said that this number highly fluctuates between studies, also websites that solely deal with equity- and debt-based crowdfunding tend to get the unsuccessful projects offline immediately. Therefore data on unsuccessful projects is often not available. (Hornuf & Schmitt, 2016; Lukkarinen, Teich, Wallenius, & Wallenius, 2016)

The amount of backers along with their standard deviations is in line with prior research, here the average project had 155 backers, with a maximum of 1086. The project targets were as predicted large, with especially a big standard deviation of €168,819.80, to account for this problem in the analysis the variable was logarithmic transformed. The average backer funded a project for €1609.50. The amount of projects per year is fairly evenly distributed over the period 2013-2018, with logically 2018 being slightly behind on the other years as it has not ended yet. Most projects in this study were for profit with 77 projects that were for profit and only 16 that had a non-profitable end goal.

Table 1: 'Descriptives Oneplanetcrowd and predictors'

	Min.	Max.	Mean	SD
Success%	1.00	855.00	174.8925	138.55877
Success/Failure	0	1	.87	.337
Project Target	€ 10,000.00	€ 1,000,000.00	€ 152,693.55	€ 168,819.80
Backers	1	1086	155.02	191.937
Funding per backer	250.00	10000.00	1609.4952	1138.23672
Backers	1	1086	155.02	191.937
Total raised	€ 500.00	€ 2,500,000.00	€ 281,621.27	€ 399,309.69
Profit/Non-profit?	1	2	1.17	.379
On-platform updates	0	17	1.55	2.772
FB updates	0	37	5.83	7.739
Twitter updates	0	89	8.89	14.952
IG updates	0	12	.40	1.547
LinkedIn updates	0	27	.34	2.811
Total S. media updates	0	102	15.18	21.052
Channels used	0	3	1.47	.845

Next to the fact and figures of the crowdfunding platform, in Table 1 can be seen that the amount of updates on the platform itself ranged from 0 to a maximum of 17, the mean was only 1.55. This is less than expected, but can be partially explained by the projects on the platform in the early years, in the first years the projects usually did not provide updates, whereas in later years most projects did. This might be because in the beginning only a select group of people knew of crowdfunding and were keen on investing regardless, whereas in later years a broader public could be attracted and had to be motivated, also because more projects appeared on crowdfunding platforms the founders may felt obliged to motivate investors via updates more.

Furthermore it provides some insights on the social media activity of the projects used in this study. As one can see the mean of Facebook messages is lower than that of Twitter updates, however also the standard deviation is lower meaning the variability is lower for Facebook updates. In this dataset Facebook is used to promote the campaign in 74.7% of the projects whereas Twitter is only used 62.4% of the time. Interesting to see is also the neglect of Instagram and LinkedIn, these two social media channels are still barely used by any of the founders. Potentially these social media channels are interesting to reach the next generation of crowdfunders. Combining all social media channels the mean of the *total social media updates* is 15.18 with a maximum of 102 posts over several media channels. The maximum amount of social media channels used is 3, this means that no project used all four channels to promote their campaign.

In Table 2 one can see the correlations of the various variables to the dependent variable *Success%*. A correlation analysis with Pearson is used to analyze if the variables have a significant correlation with the success of the campaign. Also the variables are checked for correlation between them. When looking at the table it can be seen that 4 variables (i.e. *On-platform updates, Twitter updates, Total social media updates and Profit/Non-profit?*) hold a significant relation to the dependent variable. The strongest with a $p<0.01$ *On-platform updates* holds a weak positive relation of $r = .297$. The other predictors have less correlation and weaker relations to the dependent variable. It can also be seen however that multiple variables have significant influence on other predictors. To control multiple regressions have been conducted with 10 models, as can be seen in Table 3.

Table 2: 'Correlation matrix'

	Success%	On-platform updates	Facebook updates	Twitter updates	Instagram updates	LinkedIn updates	Social Media channels	Total Social media updates	Project Target (Log)	Profit/Non-profit?
Success%	1									
On-platform updates	.297**	1								
Facebook updates	0.195	.234*	1							
Twitter updates	.236*	.436**	.556**	1						
Instagram updates	0.077	0.02	.349**	0.188	1					
LinkedIn updates	-0.035	0.037	-0.01	-0.087	0.203	1				
Social media channels	0.200	0.203	.503**	.408**	.403**	.242*	1			
Total social media updates	.255**	.384**	.804**	.935**	.349**	-0.034	.517**	1		
Project target (Log)	0.174	.237*	-0.08	0.111	0.095	0.087	0.174	0.055	1	
Profit/Non-profit?	-.213*	-0.124	-0.116	-0.138	-0.098	0.019	-0.199	-0.148	-0.066	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3: 'Regression analyses'

Model	1	2	3	4	5	6	7	8	9	10	11
(Constant)	42.56	126.792	-17.931	70.262	50.947	45.848	19.94	50.165	-3.268	38.701	163.381**
	(.78)	(0.442)	(0.905)	(0.664)	(0.756)	(0.782)	(0.889)	(0.763)	(0.983)	(0.803)	(0.001)
On-platform updates	14.364*	11.235*								9.45	11.633*
	(0.014)	(0.042)								(0.09)	(0.026)
Facebook updates	-29.140*		2.962						1.940	1.736	
	(0.023)		(0.077)						(0.366)	(0.413)	
Twitter updates	-30.717*			1.653					1.068	0.373	
	(0.017)			(0.096)					(0.336)	(0.749)	
Instagram updates	-32.354*				4.398				-1.295	0.681	
	(0.046)				(0.644)				(0.891)	(0.942)	
LinkedIn updates	-56.416					-0.173			-11.803	-18.12	
	(.200)					(0.974)			(0.777)	(0.661)	
Social media channels used	8.733						21.154				
	(.642)						(0.243)				
Total social media updates	30.946*							1.178			
	(0.016)							(0.051)			
Project target (Log) (control)	12.342	3.238	20.608	8.244	11.653	12.336	16.862	8.485	18.918	14.198	
	(.333)	(0.816)	(0.094)	(0.543)	(0.392)	(0.371)	(0.154)	(0.544)	(0.139)	(0.271)	
Profit/Non-profit? (control)	-49.939	-5.359	-59.237	-3.604	-9.303	-10.065	-55.872	-2.236	-56.653	-52.456	-5.546
	(.149)	(0.887)	(0.09)	(0.925)	(0.81)	(0.795)	(0.105)	(0.953)	(0.111)	(0.136)	(0.883)
R Square	0.215	0.055	0.106	0.041	0.013	0.01	0.113	0.024	0.118	0.15	0.055

a. Dependent Variable: Success%;

*. P < 0.05; **P<0.01

4.1 On-platform updates

Table 3 gives an overview of the regression analyses that has been used to test hypothesis 1, for this hypothesis models 1, 2, 10 and 11 are looked at. In the first model all independent variables of the conceptual model, named in 3.2, are considered. With a significance of .014 the relation is strongly significant. In model two the variable is tested with both control variables, in this model *On-platform updates* also turns out to be significant. The variables *Project target (log)* and *Profit/Non-profit?* are used as control variables in model 2 as prior research showed these to be significantly influencing the success of a campaign. In model 10 the individual social media channels have been added to see whether this would also make a difference, in this model the predictor is not significant with p=.09. The predictor *On-platform updates* holds a correlation with both *Facebook updates* and *Twitter updates.* The last model, model 11 is added as the predictor has a significant correlation with the control variable *Project target (log),* also in this model the variable *On-platform updates* is significant with p=.026. With the results of the whole model, as well as the sub analyses it can be concluded that hypothesis 1 is confirmed.

The R-squared does indicate that the variable can only explain 5.5% of the variability of the dependent variable *Success%.*

4.2 Social media activity

4.2.1 Social media updates

Hypotheses 2 and 3 regarded the off-platform social media activity of the founders on the crowdfunding project. In this study a difference was made between amount of social media updates and amount of social media channels used.

Firstly hypothesis 2; 'the amount of social media updates provided is positively related to the success of a crowdfunding campaign'. For this hypothesis models 1, 3, 4, 5, 6 and 8 can be used. The first model once again shows the effects of all independent variables within the whole conceptual model. This model shows significance for variables *Facebook updates* (.023), *Twitter updates* (.017), *Instagram updates* (.046) and *Total social media updates* (.016). all these variables however show a negative unstandardized β of ranging from -29.140 to -32.354, which is highly unlikely and might has to do with the high covariance.

In models 3 to 6 the effect and significance of the individual social media channels can be seen. All of the predictors regarding social media turned out to be insignificant to the dependent variable. *Facebook updates* and *Twitter updates* came close to the alpha of 0.05 with p-values of respectively 0.077 and 0.096, but are insignificant nevertheless. The updates on Instagram, but also those on LinkedIn show a negative β, however this might be due to the small sample of firms providing updates on these channels.

In model 8 the effect of total social media updates is given, irrelevant where and on how many social media channels the posts are spread out. This variable is strongly correlated to *Success%* in model 1. In model 8 this independent variable has a p-value of .051, which is only slightly higher than the set alpha of 0.05. Based on the results of the individual social media channels hypothesis 2 would be rejected, however the results of model 8 with the *total social media updates* it can be said that the hypothesis cannot be confirmed with certainty, however the variable *total social media updates* seems to show some a positive correlation with the dependent variable, also this result might be affected by the low usage of both Instagram and LinkedIn. Hypothesis 2 has to be rejected, but there might be a confounding variable that links the variables to the dependent variable.

4.2.2 Social media channels

Regarding the amount of *Social media channels used,* models 1 and 7 provide insights on this predictor. With a p-value of .642 in model 1 and a p-value of .243 it is larger than the alpha, meaning that hypothesis 3 is rejected based on this study and dataset. However due to the fact that LinkedIn and Instagram are only used to a very limited extent by the project founders the sample size might be too small to substantiate this claim. Further research could look into other social media channels.

The R-square of all independent variables counts up to .215 Which shows that this model can explain 21.5% of the variability of dependent variable. This indicates that there is at least one more variable that is missing to link successfulness to these variables. Also more than one variables also having influence is a possibility, and more likely.

4.3 Additional research

As mentioned in the introduction, crowdfunding is becoming more popular and alternative financing is taking a more prominent role in the financing society year by year. Therefore several analyses have been conducted to see if these theories hold in a quantifiable measure. Tables 4 and 5 show the descriptives and a one-way ANOVA that compare the means of crowdfunding success through the years 2013-2018. A significance of .414 indicates that the success between years is not significantly differing, it can also be concluded, based on this data, that the chances of running a successful crowdfunding are not getting higher even tough crowdfunding becomes more popular.

Table 4: 'Development success per year'

	N	Mean	SD	Min	Max
2013	15	179.8667	216.68735	9.00	855.00
2014	16	167.8750	131.15176	5.00	560.00
2015	17	181.7059	153.99747	1.00	631.00
2016	16	234.8125	144.65601	102.00	669.00
2017	21	142.5714	46.62250	48.00	250.00
2018	8	130.1250	48.90643	102.00	250.00
Total	93	174.8925	138.55877	1.00	855.00

Table 5: 'ANOVA campaign year on success'

	Sum Squares	df	F	Sig.
Between Groups	97365.457	5	1.015	.414
Within Groups	1668899.468	87		
Total	1766264.925	92		

5. DISCUSSION

This study is based on a database that is collected manually for all 93 projects, that deal with either debt-based or equity-based crowdfunding on the crowdfunding platform Oneplanetcrowd. All projects have a sustainable or societal purpose embedded in the business model/initiative. The dependent variable measured is the extent to which the project was successful compared to their set target. This variable is not made a dummy variable to account for the fact that only 12 projects of the 93 failed, whereas the most successful projects were reached up to 855% of their target.

The first hypothesis that has been tested during the analysis is the hypothesis that assumes that if the project founders provide more platform updates on the project page on Oneplanetcrowd, this would beneficially affect the success of the crowdfunding campaign, whereas giving less or no updates would negatively affect the campaign's success. This was hypothesized because of the high probability of moral hazard and information asymmetries within crowdfunding projects, providing updates could indicate more transparency and trustworthiness. From the regression the hypothesis is supported. The correlation matrix showed only a weak link of r=0.297 between on-platform updates and success of the campaign. The variable is however significant at the 95% confidence interval and has a positive relationship to the dependent variable.

The second and third hypotheses were on the effect of off-platform activity via social media channels. The channels analyzed for this study were Facebook, Twitter, Instagram and LinkedIn. These were chosen with the assumption that Facebook and Twitter were used by most people in the Netherlands, whereas Instagram is mainly used by young people and LinkedIn is a professional networking website. The idea behind this was to see if media that is meant for different types of people would provide different levels of effect on the crowdfunding campaigns. As well as the individual channels, there was also looked at the total amount of social media updates provided irrespective on where these were posted or on how many different websites. The third hypothesis solely focused on the amount of different channels used to reach out to potential investors. This was chosen to see if spreading your message over different channels would increase your chances of success, as it would be logical that a wider spread and reach of people knowing about your crowdfund would be mean higher chances of finding investors.

Hypothesis two was tested with multiple tests, the Pearson correlation test and multiple regressions; the whole model, 4 with the individual social media channels and one with the variable *Total social media updates*. The Pearson correlation showed that Twitter had the highest correlation with the dependent variable (.236), this was followed by Facebook (.195). Instagram and LinkedIn had links of only .077 and -.035, respectively. This means that all links were 'weak' or 'low' according to the guide that Taylor (1990) provided, as they are less than .350. The variables *Twitter updates* and *Total social media updates* showed significance in the Pearson correlation. In model 1, including all variables, *Facebook updates, Twitter updates, Instagram updates* and *Total social media updates* showed evidence for significance, however the unstandardized coefficients for the first three are all negative and their separate models show positive unstandardized betas. This indicates that model 1 cannot be used to conclude anything about the effects of the separate individual channels. The regressions with the individual channels separated showed no evidence of any significance with significances ranging from .077 to .974. The regression with the total amount of social media updates was rather surprising with a significance of .051 just falling short of the 95% confidence interval. This could be an indication that there is an effect nevertheless. The sample size could have affected the outcomes, Also there might be a confounding variable that intervenes between these variables, this could for example be the variable trust between founder and funder. It might be that 'the crowd' needs to be compelled more to gain their trust as they do not have the resource or expertise to evaluate the risks of the investment proposals in detail.

The final hypothesis that has been tested is the hypothesis that linked the amount of *social media channels used* by the founders to reach funders to the success of the campaign. The hypothesis assumes, as mentioned, a positive relationship between the number of channels used and crowdfunding success. The Pearson correlation showed r=.200, which again is a 'low' or 'weak' link to the dependent variable. Also the regression in Table 3 model 7 did not show any signs of significant effect, as p=.243>.05. This predictor however is likely heavily influenced by the lack of usage of Instagram and LinkedIn, perhaps if chosen for different channels to analyze or if the channels were more often used in the future it could turn out to be significant.

From the additional research section it can be concluded that there is no significant difference comparing the means of the projects per year. The one-way ANOVA did not show evidence that suggests the crowdfunding campaigns become more successful than they were in the beginning, or that they were more successful in any year in particular. This is rejected with a p-value of .414.

5.1 Strengths, limitations and future research

The main strength of this research is that all 93 projects, that deal with debt-based or equity-based crowdfunding, from Oneplanetcrowd have been taking into consideration. This platform shows not only the successful projects, but also the ones that failed over the years, this made the sample more representative. Another strength is the approach in testing for the effect of the social media updates. They were measured separately to check for the effect per channel as well as the total social media exposure provided by the founders. This increase the reliability of the outcomes.

Next to strengths, this research also bears some limitations. The first limitation is the sample size. A sample size of 93 is good enough for some of the variables however as can be seen by the variables LinkedIn updates and Instagram updates the sample size is not for every variable sufficient. This affected parts of the regression analysis. However comparing results from multiple crowdfunding platforms brings forth its own difficulties, that deal with reputation, previous results, different secondary purposes (Oneplanetcrowd only allows sustainable and societal projects) and varying communication tools for example.

Furthermore, the fact that Oneplanetcrowd only serves sustainable and societal projects might also have implications for the variable *profit or non-profit purpose*. Prior research showed that non-profit projects usually collect more money via collective funding (such as crowdfunding) than projects that a focused on making profit. However, all projects have more or less a sense of collective wellbeing, this may result in a differing effect of the variable.

Lastly this study neglects the possible contributions made by founders themselves, friends or family. This could mean that if a project is just short of funding a person with ties to the founder or the firm could invest to make the crowdfunding campaign successful and definite, as projects only receive the investment money when the target is met.

Future research should increase the sample size to look for more trends and increase the reliability of the study. Next to that future research should also try to map other ways of communicating with investors, such as by phone, newsletters or meetings. These are all variables that could potentially affect the need and effect of social media usage.

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