

The impact of common success factors on overfunding in reward-based crowdfunding: An explorative study and avenues for future research

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Abstract

PURPOSE: While there is abundant literature on the key determinants of reward-based crowdfunding success, little research is dedicated to crowdfunding projects that are not only successful but receive significantly more funds than initially targeted through the defined funding goal. This study seeks to shed light on this vastly neglected topic in crowdfunding research. **METHODOLOGY:** Drawing on a rich dataset of 338 reward-based crowdfunding projects, this study applied a two-step statistical analysis. First, regression analyses to determine relevant crowdfunding success factors were conducted in order to corroborate extant literature and to highlight that the data properly reflects the already identified key findings on crowdfunding success. In a second step, the very same factors were investigated for the case of overfunded projects, utilizing logistic regression analyses and a Blinder-Oaxaca Decomposition. **FINDINGS:** Although this study confirmed the findings of previous research considering the factors that increase the success probability of crowdfunding projects, the very same factors turned out to not explain the emergence of project overfunding. For instance, while project founders can provide updates, a higher number of different rewards, or utilize social media pages to increase the likelihood for success, these factors do not contribute to explain the phenomenon of project overfunding. **IMPLICATIONS:** The results of this study emphasize that in order to understand overfunding of crowdfunding projects, future research must go beyond the basic crowdfunding success factors. Building on the notion of the Two-Factor Theory, the findings suggest that the factors contributing to success can be considered hygiene factors that are required to succeed in the first place. However, these factors do not motivate the crowd to provide further funding to an already successful project. Hence the motivating factors remain yet unobserved in extant literature. In practice, this means that project teams achieving their funding goal cannot rely on the same factors that were helpful to succeed to encourage

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further funding from the crowd. The differentiation of hygiene and motivating factors for overfunding in reward-based crowdfunding offers rich opportunities for future research. More subjective factors, such as the individual perception of crowd members towards crowdfunding projects, are suggested to play an important role for the occurrence of project overfunding. ORIGINALITY/VALUE: By investigating project overfunding, this study addresses the research gap concerning the factors contributing to the emergence of project overfunding. There is little evidence on the characteristics of overfunded crowdfunding projects, and thus this study provides essential theoretical and empirical groundwork for future research to build upon this study's results.

Keywords: *reward-based crowdfunding, overfunding, business venturing, entrepreneurial finance, success factors, two-factor theory.*

INTRODUCTION

Crowdfunding has emerged as an attractive approach for entrepreneurs to acquire funding for their business idea, which is oftentimes a serious challenge for new ventures (Bagheri et al., 2019; Belleflamme et al., 2014; Mollick, 2014). In particular, reward-based crowdfunding, compared to other types of crowdfunding, such as equity- or lending-based, differs from traditional financing methods like bank loans and venture capital in that the raised funds must not be paid back and the project founders do not lose ownership (Bruton et al., 2015). Nonetheless, the basic idea of requesting funds remains the same: the founders must pitch their idea to a crowd in the same way they had to pitch it to professional investors (Kunz et al., 2017). The potential supporters (also backers or funders) evaluate the pitch and provide financial resources, expecting some kind of non-monetary reward for their support (Belleflamme et al., 2013). From a broader perspective, crowdfunding is part of the concept of crowdsourcing (Belleflamme et al., 2014). The term of crowdsourcing was introduced in 2006 in an article written by Howe (2006) and is described as “taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call.” In this context, reward-based crowdfunding is defined as an open call to individuals to provide “financial resources either in the form of donation or in exchange for the future product or some form of reward to support initiatives for specific purposes” (Belleflamme et al., 2014, p. 588).

Succeeding with a crowdfunding campaign entails great opportunities for entrepreneurs. As reward-based crowdfunding projects typically offer rewards in the form of pre-orders of the final product to be developed upon crowdfunding success, the crowdfunding campaign is often the first point of contact between the project team and early customers (Block, Colombo, et al., 2018). Thus, the funding period can ultimately be seen as a possible

indicator of future demand (Belleflamme et al., 2015). Attracting a sufficiently large crowd can contribute to the successful commercialization of the crowd-funded idea, or increase the product quality (Butticè & Noonan, 2020). Successful crowdfunding campaigns can also serve as a positive signal for future funding rounds (Roma et al., 2018; Thies et al., 2018; Vanacker et al., 2019), such that crowdfunding success facilitates acquiring funds in the long term. Moreover, competencies in acquiring external funding are positively related to venture growth (Brinckmann et al., 2011), and hence the experience gained through successful projects can ultimately contribute to the long-term survival of new ventures.

While, among successful reward-based crowdfunding projects, a majority succeeds by small margins above the initially defined funding goal, few projects are overfunded and exceed their funding goal by large margins (Mollick, 2014). These overfunded projects offer even stronger signals against the backdrop of the aforementioned benefits – achieving funds significantly above the initial funding goal provides additional positive signals for customer demand and hence future funding rounds. As such, overfunding can provide project founders with a competitive edge in achieving and maintaining sustainable growth beyond the crowdfunding campaign. Yet, there is surprisingly little empirical evidence on the determinants of overfunding, although the funding amounts of overfunded projects often are comparable to the funding provided by venture capitalists.

Consequentially, the resulting research question is as follows: Which factors contribute to overfunding of reward-based crowdfunding projects? By addressing this research question, this paper informs crowdfunding practitioners whether there are instruments that can be used to encourage the crowd further to provide additional funds once a reward-based crowdfunding project has reached its initial funding goal. Hence, it provides guidance for project teams that reached the funding goal prior to the end of their crowdfunding project. From a theoretical perspective, this paper contributes a theoretical framing and groundwork for subsequent research on overfunding in reward-based crowdfunding.

THEORETICAL BACKGROUND

A signaling theory perspective on reward-based crowdfunding

Keeping in mind that overfunded projects are a subset of successful crowdfunding projects, it is essential to initially determine which factors enable crowdfunding success, as a necessary requirement for subsequent

overfunding. Drawing on Spence's (1973, 2002) idea of the signaling theory, recent research adopted this notion in a crowdfunding setting under the assumption of information asymmetries between the project founders and the crowd (Davies & Giovannetti, 2018; Kim et al., 2016; Pinkow & Emmerich, 2021; Short et al., 2017; Vismara, 2018). In a crowdfunding setting, the project team communicates information about the quality of their idea and the abilities of the founders to the crowd, who interprets this information and sends feedback to the project team (the signaller) (Connelly et al., 2011). The feedback in this context is the decision to support a project by providing financial resources. Entrepreneurs aiming to finance their idea publicly through crowdfunding are especially challenged to provide credible claims, or signals, to the crowd as to convince potential supporters why their project idea is worth supporting (Kim et al., 2016).

Hereby, the crowd does not evaluate signals individually but interprets a portfolio of signals they perceive (Courtney et al., 2017). The signals sent by the signaller, the project founders, thereby address specific information surrounding a more general issue. As such, crowdfunding research is usually dedicated to specific aspects of crowdfunding. In particular, recent literature can be categorized into three overarching themes, referred to as three sets of signals aiming at communicating more general information. First, in Mollick's (2014) seminal study on crowdfunding, he argues that project founders signal a basic preparedness through providing updates, pictures and videos on the crowdfunding platform, which are subsequently widely adopted by further studies as basic factors influencing project success (e.g. Fernandez-Blanco et al., 2020; Kunz et al., 2017; Wang et al., 2018; Zhou et al., 2018). The basic quality indicators resemble the utilization of the standard features and tools that crowdfunding platforms provide to project founders. A second major theme concerns the network related to a crowdfunding project, including the role of both social and personal networks (Colombo et al., 2015; Datta et al., 2018; Hekman & Brussee, 2013). The network-related theme relates to the potential crowd size and hence determines which factors contribute to attract a sufficiently large crowd to provide to a project. As such, the network theme is a fundamental precursor to crowdfunding success, as successful projects require a sufficiently large crowd to be aware of the project in order to engage in decision-making whether to support the project, or not. From a signaling perspective, project teams that are able to demonstrate that they are embedded in a sufficiently large network may convince the crowd that there is sufficient support for their project and the availability of a large reach concerning the project founders' communication. The third theme is related to trust-building measures, related to offer claims on the founders' abilities (Zheng et al., 2016), such as a convincing and credible project

description (Mollick, 2014; Zhou et al., 2018) or to display professionalism (Steigenberger, 2017). The trust theme thus suggests that project founders must offer sufficient claims concerning their credibility, and to demonstrate that the project goal is feasible. These three blocks, aiming at signaling basic preparedness, creating trust, and having access to a sufficiently large network, will be used in the following sections to indicate the relation to project success, and subsequently to project overfunding.

Crowdfunding success factors and project overfunding

Basic crowdfunding success factors

Previous research has mainly addressed factors contributing to the general success of crowdfunding projects. As such, the number of updates during the funding period provided by the project founders, as well as the availability of a pitch video can be considered basic quality signals (Cordova et al., 2015; Mollick, 2014). Most research confirms the positive effect of the availability of videos and pictures on either the raised amount of capital (Evers et al., 2012) or the probability of success (Koch & Siering, 2015; Mollick, 2014). This might especially facilitate the success of consumer goods projects, which can easily communicate the value proposition through text and video (Agrawal et al., 2014). The number of updates provided by the project founders as well as the number of comments on the project page play significant roles in explaining the probability of success (Beier & Wagner, 2015; Evers et al., 2012; Joenssen et al., 2014; Koch & Siering, 2015; Xiao et al., 2014).

The funding goal itself has been shown to be a crucial determinant of project success, generally having a negative effect on the success rate, that is, the higher the targeted funds, the lower the probability to succeed (Beier & Wagner, 2015; Cordova et al., 2015; Koch & Siering, 2015; Mollick, 2014) and the less money is raised (Evers et al., 2012). Moreover, the level of the funding goal may even moderate the impact of the basic success factors on project success (Pinkow & Emmerich, 2021), demonstrating the central role of the funding goal. The above-mentioned factors relate to instruments made available by the crowdfunding platforms, and are considered basic quality indicators, following the argumentation by Cordova et al. (2015) and Mollick (2014).

Network-related factors for crowdfunding success

Crowdfunding is conceptually linked to the exchange of resources – financial support in return for a specific reward. However, several findings suggest

that crowdfunding should be viewed from a broader perspective. Especially the aspect of a crowdfunding 'community' is receiving increasing attention. Being part of a community or network after contributing to a project should not only be viewed as a result, but also as a preceding factor that motivates individuals to provide financial support (Gerber et al., 2012; Gerber & Hui, 2013; Schwienbacher & Larralde, 2010; Zvilichovsky et al., 2013). Moreover, it has been shown that higher activity on social media platforms is positively correlated with the number of supporters (Lu et al., 2014). Considering social media as an example of a network, a major aspect is the possibility to facilitate communication between potential customers (e.g. funders) and ventures (e.g. crowdfunding projects) and provides an opportunity to react to concerns about a product (Edosomwan et al., 2011). The use of social media can ultimately increase general entrepreneurial performance (Kadam & Ayarekar, 2014). Accordingly, the availability of social networks and the network size are factors that help to succeed in crowdfunding (Beier & Wagner, 2015; Mollick, 2014; Thies et al., 2014).

An additional factor relating to networks is the number of team members in the founding team, which increases the success probability with an increasing number of founders (Beier & Wagner, 2015; Evers et al., 2012). Furthermore, founders who are active in the crowdfunding community by supporting other crowdfunding projects significantly increase the chance of succeeding with one's own project (Davies & Giovannetti, 2018; Koch & Siering, 2015; Zvilichovsky et al., 2013). These results contribute to the idea that the aspect of being a part of a community from the funders' perspectives and using community tools from the founders' perspectives contributes to the success of a crowdfunding project.

Trust-related factors for crowdfunding success

The concept of 'trust' comprises a myriad of different aspects and definitions. The definition used in this study is considering trust as competence, benevolence, and integrity (McKnight & Chervany, 2001). Hereby, especially in the context of online transactions, credibility is one key factor for individuals to trust a transaction (Lowry et al., 2014). Inferring from these considerations, the financial support of a crowdfunding project corresponds to an online transaction. The likelihood that this online transaction will be conducted might therefore be increased if the supporters feel they can trust the project founders being competent to implement their idea, will not have bad intentions regarding the usage of the raised money, and believe that the founders are honest and credible. Following this argumentation, a detailed

project description supports creating trust, such as the description of how the acquired funding will be used or providing a detailed biography of the project founders. A higher number of words used to describe a project can increase project success (Zhou et al., 2018), and subjective aspects, such as using precise language and an interactive style, further increase the success probability (Parhankangas & Renko, 2017). Moreover, providing pictures of team members positively impacts the perceived trustworthiness in the context of online transactions (Steinbrück et al., 2002).

Overfunding of crowdfunding projects

Crowdfunding projects are subject to specific funding patterns. First, by comparing successful and unsuccessful crowdfunding projects, either projects fail to reach the goal by large amounts, or the funding is acquired with small amounts above the goal (Cordova et al., 2015; Mollick, 2014). In this context, the research question of this study gains additional relevance – most successful projects only receive the funds they requested. However, some projects deviate from this pattern and exceed their initial target by far. The arising question is what the differentiating features of these projects are.

There are few studies directly addressing the topic of project overfunding. The study of Cordova et al. (2015) suggests that despite the insignificance of the number of updates and comments for success in their study, successful projects with higher success rates still demonstrate an increasing number of these factors. Moreover, the authors point out that a higher funding goal lowers the overfunding rate and is the most important driver for overfunding (Cordova et al., 2015). A subsequent study by Koch (2016) picks up the results of Cordova et al. (2015) and provides an analysis on overfunding. Firstly, Koch (2016) criticizes the study of Cordova et al. (2015) for methodological weaknesses and therefore suggests adjusting the research concerning overfunding. Koch (2016) reveals that most factors mentioned in the previous section are also highly significant for overfunding, that is the funding goal, pictures, videos, updates, comments, friends, number of supported projects, number of previously created projects, duration of the funding period, and also the number of words used to describe the project. Koch (2016) only considers successful projects and uses the degree of success as the dependent variable. More specifically, because of the aforementioned funding patterns, the log transformation is used to smooth the skewness of the degree of success (Koch, 2016). However, as mentioned above, successful projects mainly reach their goals by small amounts, and hence the distribution of the degree of success is typically strongly right-skewed. By using the log transformation of the degree of success, it changes the very nature of the

phenomenon of overfunded projects, namely the specific funding pattern. This methodology implies a different distribution of the degree of success in order to fit a linear regression model, as in the case of Koch's (2016) study. Moreover, Koch (2016, p. 10) mentions that by using the original distribution of the degree of success, there are "surprisingly few significances."

In a further study, Adamska-Mieruszewska et al. (2019) apply a logit regression to explain project overfunding. The authors (Adamska-Mieruszewska et al., 2019) determine the level of overfunding at 110% of the initial funding goal, based on Mollick's (2014) finding that most crowdfunding campaigns only exceed their funding goal by very small amounts. Their results indicate that several factors impact overfunding probability, such as the funding goal itself, the number of comments, the number of updates, the number of supporters and the number of previously created crowdfunding projects by the founders. However, some crucial factors like social networks or the control of the project category are not included in their statistical analysis, and the overfunding threshold of 110% is set rather arbitrarily, such that enhancing the analysis with additional thresholds can provide additional insights concerning different levels of overfunding. Moreover, the number of comments is most likely strongly correlated with the number of backers, and both variables are subject to potential endogeneity.

This study will therefore enhance and complement the previously mentioned approaches to examine the phenomenon of overfunding and contribute to the understanding of this vastly unexplored topic in crowdfunding research. Since research on overfunding is scarce, this study pursues to apply an exploratory approach to project overfunding. Nonetheless, utilizing theoretical considerations stemming from Herzberg's (1968) Two-Factor Theory on success factors and overfunding factors serve to derive a central hypothesis. The Two-Factor Theory (Herzberg, 1968) was originally developed to explain employee motivation. The fundamental notion of the theory states that the factors that help to avoid dissatisfaction are not the same factors that lead to satisfaction. In other words, simply increasing or improving the factors that help to avoid dissatisfaction (hygiene factors) does not necessarily lead to an increase in satisfaction (motivators) (Herzberg, 1968). As this underlying notion is rather general, Herzberg's (1968) Two-Factor Theory is used by researchers in fields different from the original field of employee satisfaction. The interdisciplinary notion is hence used, for instance, in information systems research, such as online buying decisions (Lo et al., 2016) or customer behavior towards product adoption (Park & Ryoo, 2013). The idea of the existence of hygiene factors and motivators is also recently discussed among crowdfunding researchers (Alhammad et al., 2020; Yang & Lee, 2018). Applying the notion of the Two-

Factor Theory to the phenomenon of overfunding, the factors that enable project success in the first place are hygiene factors that should be fulfilled in order to attract a sufficiently large crowd willing to contribute financial resources. In contrast, these factors do not offer additional motivation to provide funds beyond the funding goal, meaning they do not impact the likelihood of project overfunding. Following this line of argument, the central hypothesis on project overfunding, based on the idea of the Two-Factor Theory, is stated as follows:

H1: Factors which increase the success probability of a crowdfunding project do not increase the probability of project overfunding.

METHODOLOGY

Data collection and sample

The data used in this study was gathered from the largest German reward-based crowdfunding platform StartNext (see <https://www.startnext.com/>) for projects in the years 2015 and 2016. StartNext is a reward-based platform, combining both reward- and donation-based crowdfunding projects, depending on the supporter's choice. As such, the sample includes projects from the same platform, which allows one to assume relatively similar external conditions. For instance, the crowd composition, popularity of reward crowdfunding in Germany, and overall funding volume in Germany (Klein & Pinkert, 2017) remain stable across the two years observed in the sample. The assessed projects were subject to the all-or-nothing principle. The raised money was only transferred to the project teams in case the projects exceeded their initially set funding goal. Otherwise, the money was transferred back to the supporters, and the project was considered unsuccessful.

A description of all collected variables is illustrated in Table 1. Data was collected on the category in which the single projects were started. In total, there are three main categories: creative and modern projects, artistic projects, and social projects. These project categories were included as control variables. As a second step, the level of the funding goal set by the project founders, the availability of at least one picture and video was observed and recorded as dummy variables. Beyond that, the number of updates until the end date of the funding period as well as the total amount of comments was observed, the number of rewards offered and the number of specified keywords. These factors are considered as a minimum preparation effort by the founding team (Mollick, 2014), hence called the *basic quality indicators*.

Table 1. Description of variables

Variable Name	Explanation
Success	Success of project (1=successful, 0=unsuccessful)
Overfunded	Project reached at least 110% / 130% / 150% of the funding goal (1=yes, 0=no, and Success=1)
Controls	
Cat1	Category 1: Includes projects of the following subcategories: Design, Invention, Technology, Science (1=project in category 1, 0 otherwise)
Cat2	Category 2: Includes projects of the following subcategories: Film / Video, Photography, Journalism, Art, Literature, Fashion, Music, Theatre (1=project in category 2, 0 otherwise)
Cat3	Category 3: Includes projects of the following subcategories: Education, Community, Event, Social Business, Environment (1=project in category 3, 0 otherwise)
Goal	Funding goal in €
Basic quality indicators	
Picture(s)	Picture(s) available on project page (1=yes, 0=no)
Video(s)	Video(s) available on project page (1=yes, 0=no)
# Updates	Number of updates until the end date of the funding period
# Comments	Number of comments on the project page
# Giveaways	Number of giveaways/rewards
Keywords	Keywords specified by project founders
Network	
# Founders	Number of project founders listed
Supported Projects	Number of other supported projects by all project founders
Social Media	Dedicated Social Media page available and linked (1=yes, 0=no)
Trust	
Surplus	Mentioned how funds above the funding goal will be used (1=yes, 0=no)
NoW Description	Number of words used to answer the question: ‚What is the project about?’
NoW Target	Number of words used to answer the question: ‚What are the goals and who is the target group?’
NoW Reasons	Number of words used to answer the question: ‚Why should someone support this project?’
NoW Usage	Number of words used to answer the question: ‚What happens with the money if the project was successful?’
NoW Biography	Number of words used to answer the question: ‚Who is behind the project?’
Founder Picture	Picture of the founders with visible face (1=yes, 0=no)
Company Imprint	Imprint with a company name provided (1=yes, 0=no)

Building on the results of the previous literature, the factors attributed to the group of *network factors* are the total number of founders registered on the individual StartNext crowdfunding campaigns, indicating the size of the personal network from the project founders, and the accumulated number of other crowdfunding projects that all project founders of one project supported. The number of supported crowdfunding projects indicates the activity of the founding team in the crowdfunding community itself. Beyond that, the availability of social media was observed. In particular, the availability of an artist Facebook page or a dedicated Twitter profile.

According to the provided definition of *trust*, there are several subcategories of trust which were covered by the following factors: the collected data contains information about the level of how detailed the description of the project was. A first step was the assessment of whether the founders provided a description of how the raised funds and funds exceeding the initial target will be used as a sign of transparency. This factor was recorded as a dummy variable and received the value 'yes,' if the founders provided a description on how the raised funds exceeding the funding goal will be spent upon successful funding. Another factor is the depth of the project description. More specifically, StartNext requires founders to answer six standardized questions about the project: What is the project about? What are the goals and who is the target group? Why should someone support this project? What happens with the money should the project be successful? Who is behind the project? The collected data contains the number of words used to answer each of these questions. Separating these categories allowed the clear assessment of several aspects of signals which aimed at creating trust, such as providing a detailed description of the project team and their experience or providing credible claims why the crowd should support a given project. In addition, the availability of a picture showing the face of at least one founder and the availability of a company imprint including an address were recorded. Both factors may contribute to increasing trust through decreasing possible fraud.

Methods

A hierarchical robust logistic regression approach was chosen to analyze the collected data. Overfunding was determined by three different thresholds: at 110%, 130%, and 150%, calculated by the ratio of acquired funding to the initial funding goal. The hierarchical approach followed the major themes on project success – *basic quality indicators*, *network*, and *trust* – which allowed a comparison of the individual effects of the three groups separately. In particular, the basic quality indicators served as a baseline model (Model 1),

and network- and trust-related variables were added subsequently in models 2 and 3, respectively. Regression model 4 included all variables across all three themes. In order to make the results as relatable as possible to previous research, a logistic regression on project success was conducted initially, which confirmed that the data in this study reflects and corroborates previous research findings on common success factors. As this step serves as validation of the data in this study towards the findings that have already been identified by extant literature, no hypotheses were developed towards crowdfunding success. Subsequently, the logistic regression for project overfunding allowed one to assess whether factors that significantly explained project success also explained project overfunding. Thereby, this study exclusively considered factors that can help founders reach the funding goal or reach the state of an overfunded project. All factors included in the regression models are factors that can be directly defined or influenced by the project founders. Since project overfunding constitutes a special case of successful projects, the goal of this study is to explain the occurrence of outliers. In order to avoid outliers to bias the regression estimates, robust regressions were conducted to weigh all observations based on their leverage.

In addition to regression analyses, the Blinder-Oaxaca decomposition was conducted using STATA (Jann, 2008), separating successful and overfunded projects according to the three defined funding thresholds of 110%, 130%, and 150%. The Blinder-Oaxaca decomposition was initially developed to investigate wage differences, but can serve to study group differences in any meaningful field of interest (Jann, 2008). The Blinder Oaxaca composition assumes a linear regression model, such that the degree of overfunding, determined as the total amount of funding raised in € divided by the funding goal, was used as the dependent variable in this case. The results of the Blinder-Oaxaca decomposition report (a) the individual regression models for successful and overfunded projects, (b) whether the difference between these two regression models is statistically significant, and (c) separates an *endowment* and a *coefficient* effect. The endowment effect explores whether and to what degree the difference in regression models originates from different characteristics among the groups of successful and overfunded projects. In other words, if successful projects had the same characteristics as overfunded projects, the endowment effect tests whether these projects would become overfunded as well. The coefficient effect indicates whether the independent variables have a different impact on the dependent variable, or in other words, it tests whether the investigated independent variables have a different impact on the group of overfunded projects than on the group of successful projects. Lastly, an interaction term of both the endowment and the coefficient effect is indicated.

RESULTS

Descriptive statistics

The descriptive statistics of the collected data is illustrated in Table 2. In total, 338 projects from 2015 and 2016 are included in the database, with a success rate of 51%, or 174 projects. Out of these 174 successful projects, 83 projects received more than 100% but less than 110% of the funding goal. 91 projects were able to raise at least 110%, 49 projects exceeded 130%, and 26 projects exceeded 150% of the targeted funding goal. The most successful project was able to get 9 times the amount of its projected funding goal. The average contribution per supporter was €89.14 and each project was supported by 102 backers on average. The vast majority of projects provided the basic quality indicators of pictures and videos, with 86% and 97%, respectively. The questions founders were asked to answer to describe their crowdfunding project were answered with 90-100 words on average. Only the description of the project itself demonstrates a higher mean average of number of words with 175. 36% of all projects mentioned the use of any funds above the funding goal.

Table 2. Descriptive statistics

Variable	n	Mean	Std. dev.	Min	Max	Frequency
Cat1	338	0.30	0.46	0	1	100
Cat2	338	0.41	0.49	0	1	137
Cat3	338	0.30	0.46	0	1	101
Goal (in €)	338	13,364.53	23,652.52	100	280,000	
Success	338	0.51	0.50	0	1	174
Overfunded 110%	174	0.52	0.50	0	1	91
Overfunded 130%	174	0.28	0.45	0	1	49
Overfunded 150%	174	0.15	0.37	0	1	26
Picture(s)	338	0.86	0.35	0	1	290
Video(s)	338	0.97	0.16	0	1	329
# Updates	338	4.98	5.35	0	36	-
# Comments	338	10.54	15.80	0	109	-
Keywords	338	4.63	0.91	0	5	-
Give	338	11.38	7.69	0	101	-
Supported Projects	338	2.49	4.46	0	31	-
Social Media	338	0.83	0.38	0	1	279
# Founders	338	2.47	2.38	1	21	-

Variable	n	Mean	Std. dev.	Min	Max	Frequency
Surplus	338	0.36	0.48	0	1	120
NoW Description	338	175.90	127.23	8	718	-
NoW Target	338	97.04	69.22	4	511	-
NoW Reasons	338	93.95	62.21	17	454	-
NoW Usage	338	90.14	75.24	8	511	-
NoW Biography	338	98.63	88.90	1	624	-
Founder Picture	338	0.94	0.23	0	1	319
Company Imprint	338	0.65	0.48	0	1	220

Note: The column “Frequency” indicates the total number of observations for dichotomous variables with the value “1”.

Crowdfunding project success – analysis and results

The results for the logistic regression on crowdfunding success are illustrated in Table 3. The results vastly corroborate previous research findings, such that the collected data in this study reflects and confirms the results of previous studies. All models display an R-squared value around 0.40, and the Wald-test statistics indicate significant regression models. The funding goal negatively impacts crowdfunding success in all four models. Uploaded pictures to the crowdfunding page increase project success in two models (1 and 3), and videos do not significantly impact crowdfunding success at all.

Table 3. Logit regression on crowdfunding project success

Variable	(1)	(2)	(3)	(4)
Log Goal in €	-1.04***	-1.16***	-1.12***	-1.22***
Picture(s)	0.94**	0.70	0.86*	0.70
Video(s)	0.87	0.77	0.94	0.66
# Updates	0.24***	0.22***	0.24***	0.22***
# Comments	0.09***	0.09***	0.09***	0.09***
# Giveaways	0.08**	0.06*	0.08**	0.06*
Keywords	-0.06	-0.16	-0.05	-0.14
# Founders		0.30***		0.30***
Supported Projects		0.03		0.03
Social Media		1.25**		1.27**
Surplus			0.26	0.30
NoW Description			0.09	0.06
NoW Target			-0.00	-0.02
NoW Reasons			0.18	0.08

Variable	(1)	(2)	(3)	(4)
NoW Usage			-0.36	-0.48*
NoW Biography			0.18	0.12
Founder Picture			0.25	-0.22
Company Imprint			0.52*	0.39
Constant	5.56***	5.85***	5.54***	6.40***
Category control	Yes	Yes	Yes	Yes
N	338	338	338	338
Pseudo R-Sq.	0.38	0.43	0.39	0.44
Wald-Chi2	71.52***	88.37***	80.23***	94.16***

Note: Dependent variable: Project success; Wald-Chi2 = Wald χ^2 -test statistic

* p < 0.1 ** p < 0.05 *** p < 0.01.

The number of updates and comments are both highly significant and positively impact project success. However, the specified keywords do not have any impact on project success. Overall, the results lend support for the impact of basic quality indicators having an impact on project success. Concerning network-related factors, the number of founders and the availability of social media are both found to be significant for success. In contrast to previous research, the support of other crowdfunding projects by the founders was not found to increase the probability of success with their own project. For trust-related factors, there are barely any significant findings. Only the number of words used to describe the usage of the acquired funds in model (4) and the availability of a company imprint in model (3) are significant at the 10%-level.

Crowdfunding project overfunding – analysis and results

The results for the logistic regression on project overfunding at the overfunding threshold of 110% are illustrated in Table 4, which includes 83 projects between 100-110% of the funding goal, and 91 projects above 110%. All regression models suffer from low R-squared values and insignificant Wald Chi-squared statistics for the regression coefficients. The variable *Video(s)* is omitted from the regression results, since only one successful project did not upload at least one video. With the two exceptions of the number of founders and the number of words used to describe the target of the project, no other independent variable is near statistical significance. Due to the low explanatory power and the insignificant Wald-test statistics, the validity of the two (partially) significant variables, however, is questionable, and thus the results lend support for H1.

Table 4. Logit regression on project overfunding: Comparing projects with an overfunding threshold of 110% to projects with 100%-110% of the funding goal

Variable	(1)	(2)	(3)	(4)
Log Goal in €	-0.07	-0.14	-0.13	-0.16
Picture(s)	0.36	0.24	0.27	0.14
Video(s)	-	-	-	-
# Updates	0.01	0.01	0.01	0.02
# Comments	0.01	0.01	0.01	0.01
# Giveaways	0.01	0.01	0.01	0.01
Keywords	-0.09	-0.16	-0.11	-0.18
# Founders		0.14*		0.15
Supported Projects		0.01		0.02
Social Media		0.16		-0.05
Surplus			0.53	0.58
NoW Description			-0.05	-0.05
NoW Target			0.78***	0.83***
NoW Reasons			0.10	-0.03
NoW Usage			-0.38	-0.44
NoW Biography			-0.02	-0.06
Founder Picture			-1.01	-1.34
Company Imprint			0.48	0.39
Constant	0.31	0.71	0.72	1.50
Category control	Yes	Yes	Yes	Yes
N	174	174	174	174
Pseudo R-Sq.	0.01	0.04	0.07	0.10
Wald-Chi2	3.17(n.s.)	9.22(n.s.)	17.53(n.s.)	21.05(n.s.)

Note: Dependent variable: Project overfunding; Wald-Chi2 = Wald χ^2 -test statistic; n.s. = not significant
* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table 5 illustrates the regression results for project overfunding at the 130% threshold, which includes 125 projects between 100-130% of the funding goal, and 49 projects above 130%. Similar to the 110% threshold-level, the R-squared values indicate low explanatory power of all regression models. However, the number of comments is now the only significant independent variable, whereas all other estimates are not significant at all, further supporting H1.

Table 5. Logit regression on project overfunding: Comparing projects with an overfunding threshold of 130% to projects with 100%-130% of the funding goal

Variable	(1)	(2)	(3)	(4)
Log Goal in €	-0.10	-0.19	-0.26	-0.29
Picture(s)	1.01	1.06	1.05	1.07
Video(s)	-	-	-	-
# Updates	-0.04	-0.05	-0.05	-0.05
# Comments	0.03***	0.04***	0.04***	0.04***
# Giveaways	-0.01	-0.01	-0.01	-0.01
Keywords	0.14	0.05	0.14	0.08
# Founders		0.11		0.09
Supported Projects		0.05		0.05
Social Media		0.47		0.44
Surplus			0.19	0.25
NoW Description			0.01	0.02
NoW Target			0.06	0.03
NoW Reasons			0.34	0.27
NoW Usage			0.06	-0.00
NoW Biography			0.02	-0.03
Founder Picture			0.52	0.21
Company Imprint			0.46	0.37
Constant	-2.11	-2.00	-2.23	-2.16
Category control	Yes	Yes	Yes	Yes
N	174	174	174	174
Pseudo R-Sq.	0.08	0.11	0.10	0.12
Wald-Chi2	15.17*	20.24**	17.46(n.s.)	20.28(n.s.)

Note: Dependent variable: Project overfunding; Wald-Chi2 = Wald χ^2 -test statistic; n.s. = not significant
 * p < 0.1 ** p < 0.05 *** p < 0.01.

The results for overfunding at the 150% threshold are illustrated in Table 6, including 148 projects between 100-150% of the funding goal, and 26 projects with more than 150%. The results are almost identical to the previous results reported in Table 5, with rather low explanatory power expressed by the R-squared values compared to the regression results for project success. The number of comments is again significant, at the 5%-level, and the number of words used to describe the reasons why individuals should support a given project is significant at the 10%-level. Given the very few significant results, the results from Table 6 further vastly support H1.

Table 6. Logit regression on project overfunding: Comparing projects with an overfunding threshold of 150% to projects with 100%-150% of the funding goal

Variable	(1)	(2)	(3)	(4)
Log Goal in €	0.05	-0.00	-0.23	-0.24
Picture(s)	1.03	0.95	0.83	0.92
Video(s)	-	-	-	-
# Updates	-0.04	-0.04	-0.04	-0.04
# Comments	0.03**	0.03**	0.03**	0.03**
# Giveaways	-0.01	-0.01	-0.01	-0.01
Keywords	0.37	0.28	0.36	0.32
# Founders		0.07		0.02
Supported Projects		0.06		0.07
Social Media		0.14		0.14
Surplus			0.35	0.41
NoW Description			0.13	0.12
NoW Target			-0.36	-0.36
NoW Reasons			0.66*	0.64*
NoW Usage			0.04	-0.03
NoW Biography			0.12	0.09
Founder Picture			-0.42	-0.70
Company Imprint			0.87	0.90
Constant	-5.38**	-5.15*	-4.08	-4.16
Category control	Yes	Yes	Yes	Yes
N	174	174	174	174
Pseudo R-Sq.	0.09	0.12	0.14	0.16
Wald-Chi2	14.16*	19.34*	25.05*	32.24**

Note: Dependent variable: Project overfunding; Wald-Chi2 = Wald χ^2 -test statistic; n.s. = not significant
* p < 0.1 ** p < 0.05 *** p < 0.01.

Crowdfunding project overfunding – Blinder-Oaxaca decomposition

The results for the three Blinder-Oaxaca decompositions, separated by the three thresholds which were used to separate successful from overfunded projects and using the same independent variables, are illustrated in Table 7.

Table 7. Results for the Blinder-Oaxaca decomposition for different levels of project overfunding

Blinder-Oaxaca Decomposition	Overfunded > 110% (n = 174)	Overfunded > 130% (n = 174)	Overfunded > 150% (n = 174)
Differential			
Prediction Overfunded Project	1.63***	2.00***	2.43***
Prediction Successful Project	1.05***	1.10***	1.14***
Difference	0.58***	0.90***	1.28***
Decomposition			
Endowment	0.00	-0.01	0.01
Coefficient	0.50***	0.78***	1.53***
Interaction	0.08	0.13	-0.26

Note: Dependent variable: Degree of success, * p < 0.1 ** p < 0.05 *** p < 0.01.

The average degree of overfunding is 163% for projects applying the 110% threshold, 200% applying the 130% threshold, and 243% applying the 150% threshold. The degree of success for projects considered successful but not overfunded is 105%, 110% and 114%, respectively. The differences are statistically significant at the 1%-level for all three decompositions. Assessing the endowment effect, all three Blinder-Oaxaca decompositions indicate a value close or equal to zero, such that these results support H1. In other words, assuming the successful but not overfunded projects had the same characteristics as the projects considered overfunded, their degree of success or overfunding would not increase at all. However, the coefficient effect indicates that the difference between success and overfunding completely originates from the independent variables having a different impact on the degree of success or overfunding, respectively. Since the endowment effect and the interaction term are completely insignificant, this indicates that factors not included in this analysis account for the differences in the degree of success and overfunding, and the true characteristics determining overfunding remain unexplained by the applied regression models. Hence, factors not included in the regression models account for the discrimination between successful and overfunded projects, as expected in H1.

DISCUSSION

The central goal of this study is to identify factors explaining the occurrence of overfunding in reward-based crowdfunding projects. Intuitively, factors contributing to crowdfunding success, a necessary precondition of

overfunding, might constitute a potential source for overfunding. Yet, there is little empirical evidence on overfunding and the potential relationship between success factors and funding once a project achieves its initial funding goal. Hence, this study sheds light on the explanatory power that success factors for reward-based crowdfunding projects may have on project overfunding. While the findings corroborate the relevance of the examined factors for project success, there is no evidence, however, that the very same factors contribute to project overfunding, and therefore the central hypothesis (H1) is supported.

The basic quality indicators, such as posting updates, providing pictures and a pitch video, and offering a range of different rewards, are the fundamental basics when setting up and running a crowdfunding campaign. Considering a more subjective dimension concerning the implied signals involved in these factors, the entrepreneurial passion demonstrated by the founders, for instance, in their pitch videos or through the project description (Li et al., 2017), or even displays of narcissism (Anglin et al., 2018), have been shown to motivate potential backers to support a project and increase crowdfunding performance. Moreover, a recent review on personality characteristics of project teams emphasizes the importance of personality traits for crowdfunding performance (Neuhaus et al., 2021), which might be perceived through the pitch video and the project description and taken into account by the crowd. These factors can thus constitute elements of different subsets of signals, as they can be employed through the pitch video, a basic quality indicator, or the project description, which can be assigned to signals referring to trust-building measures. A further consideration addressing the project description is that not only the length of the description of projects can matter, as investigated in this study, but also its content and the used wording (Isaak & Selasinsky, 2020). Specific topical features can help founders to increase the probability to succeed, for example, by mentioning which consequences the project yields, like environmental protection (Yuan et al., 2016). In addition, the linguistic style (Parhankangas & Renko, 2017) needs to be considered in this context, such as the ability to clearly articulate issue-relevant information (Allison et al., 2017) or a positive wording (Anglin, Short, et al., 2018). Hence, to explain overfunding, a more fine-grained examination of potential determinants might be necessary. This study provides evidence that the pure means to convey signals, such as available videos and provide a more extensive project description, are insufficient to encourage overfunding. Breaking down these means into the actual signals as perceived by the crowd, as illustrated above, can extend the findings of this study in the context of project overfunding.

Additional factors that may impact overfunding are the individual motivations of backers to receive rewards. Rewards are central motivators to the crowd, yet the availability of more rewards does not impact overfunding, according to the findings of this study. Extant research provides further evidence that may provide insights enhancing this study. For instance, the number of rewards is shown to have a curvilinear relationship with project success (Du et al., 2019), and the attractiveness of rewards is equally important (Steigenberger, 2017), such that some projects might be 'self-runners' due to the idea itself (Kraus et al., 2016). In line with Wheat et al. (2013), the type of reward might play a role for backers, and it is easier to provide physical rewards for projects which aim at developing a product, whereas science-based projects must use other kinds of rewards, as the projects' results are often immaterial. Therefore, the types of rewards offered might play a role for overfunding. The attractiveness of rewards is evaluated individually by each supporter based on individual preferences. Rewards are supposed to satisfy and convince as many potential supporters as possible; the individual appeal to each supporter is, however, based on his or her subjective perception. When the attractiveness of some rewards is sufficiently high, backers might still contribute to a project that has already achieved its funding goal to secure the reward as early as possible. Thereby, the perception that their own contribution matters to the project might be subordinate to the desire to receive a specific reward, which might constitute a central determinant of overfunding.

Although network-related factors are shown not to predict overfunding in this study, previous research dedicated to social networks may help to assess these factors in more detail. The particular use of social media, such as creating a 'buzz' in social networks (Thies et al., 2014), and the individual interaction with the backers through comments (Wang et al., 2018), in terms of reply speed or maintaining a positive sentiment, positively relate to project success. Moreover, instead of randomly posting irrelevant content, strategically using social media is an important factor to be considered (Datta et al., 2018). As such, good timing of employing specific measures to boost backer motivation might be necessary, that is, a dynamic perspective on social media could provide further insights. For instance, it is more likely that backers contribute to a project when the funding goal is almost reached (Li & Wang, 2019), relating to the finding that the perception of backers that their contribution matters positively relates to their funding decision (Kuppuswamy & Bayus, 2017). Therefore, creating a social buzz seems undoubtedly useful to increase the probability to succeed with a crowdfunding project. However, the nature of how a social buzz is created, in terms of content and timing, might play a role to separate its effect on project success and project overfunding. When a project achieves its targeted funding goal, the momentum could be

used to create additional attention to the project, and the strategy of utilizing social media must be adapted to stimulate new motivation for backers to further support the project even beyond its funding goal. Research dedicated to the use of social media before and after a project has reached its funding goal could allow further insights into this dynamic. As already illustrated by Song et al. (2020), the strengths of certain signals vary over the funding period, such that studying the dynamic nature of individual signals, such as a dedicated social media strategy, can provide valuable insights into potential determinants of project overfunding.

CONCLUSION

This article addresses the yet vastly unexplored phenomenon of project overfunding in reward-based crowdfunding. Rooted in the Two-Factor Theory, the central claim of this study is that the factors contributing to project success (hygiene factors) are different from the factors contributing to project overfunding (motivators). In fact, the findings lend support for this claim, as common success factors do not indicate a significant contribution to explain project overfunding. Hence, for future crowdfunding project teams, this study suggests that once a project turns successful, the team must consider different factors and thus adapt their actions to further encourage funding beyond the initial funding goal.

Theoretical implications

While project success and project overfunding are inevitably related, they are distinct occurrences in reward-based crowdfunding. For instance, the crowd's motivation to provide financial resources is shaped by the perception of whether an individual contribution matters (Kuppuswamy & Bayus, 2017). As such, projects that have already achieved the funding goal constitute less attractive projects to provide additional financial resources, in terms of that any additional contribution does not matter for success anymore (Kuppuswamy & Bayus, 2017). Mollick's (2014) seminal study on crowdfunding provides evidence that only a few projects exceed their funding goal by large margins, invigorating the assumption that motivating factors for providing financial resources differ among projects that still pursue to achieve their funding goal, and projects that have already reached their goal. Hence, a rational assumption based on these findings is that in order to further shape the crowd's intention to provide funding, the factors motivating the crowd may change. Against this backdrop, this study suggests that the underlying notion of the Two-

Factor Theory (Herzberg, 1968) provides valuable guidance for overfunding of reward-based crowdfunding projects. In particular, applying the Two-Factor Theory to reward crowdfunding suggests that the factors required for success are hygiene factors and, as such, are basic requirements that should be fulfilled in order to succeed with a crowdfunding project. However, to further stimulate funding, other factors – motivating factors according to the Two-Factor Theory – must be considered for explaining overfunding. This study contributes to this theoretical consideration and provides empirical evidence. Supported by the regression analyses and the Blinder-Oaxaca decomposition, the results lend support for the applicability of the notion of the Two-Factor Theory in a reward-based crowdfunding context.

Beyond proposing a theoretical framing rooted in the Two-Factor Theory, the results of this study further complement and enhance extant research on project overfunding in two ways. First, this study enhances the consideration of the level of project overfunding. Previous studies define a single threshold, for instance, total funding of at least 110% of the initial funding goal (e.g., Adamska-Mieruszewska et al., 2019), or include all projects equally that achieved their funding goal in their analyses (e.g., Cordova et al., 2015; Koch, 2016), which results in projects receiving only a few percentages above the funding goal being considered overfunded. This study enhances these approaches to study overfunding and examines three levels of overfunding, at 110%, 130%, and 150% relative to the initial funding goal.

Second, the results of this study contrast with the results of Cordova et al. (2015) and Koch (2016), who identify significant relationships between success factors and project overfunding. The contrasting results might originate from the varying methodological approaches to determine overfunding, as pointed out above. As a result, it is indicated that the operationalization of overfunding plays a central role in achieving a more uniform understanding of the determinants of project overfunding.

Practical implications

For entrepreneurs considering reward-based crowdfunding as a possibility to acquire funding, this study offers important guidance. First, this study corroborates previous research and supports the findings that project teams can influence the success probability by utilizing the basic tools crowdfunding platforms offer, such as posting updates, or connecting social media profiles to their crowdfunding page. These tools, however, do not encourage the crowd to provide further financial resources once the initially set funding goal is reached. Hence, project teams that are in the fortunate situation of achieving their funding goal prior to the deadline of the funding period must

apply different strategies to motivate the crowd to provide further funding. According to the findings of this study, simply continuing with the strategy that led to success does not seem to be a fruitful approach.

Limitations and avenues for future research

The methods used to examine the phenomenon of overfunding are to some extent limited by the nature of the goal of this study, as regression analyses are subject to be biased by outliers. However, the phenomenon of overfunding is about finding an explanation for outliers, considering overfunding a subset of successful crowdfunding projects. Thus, statistical methods must be applied accordingly, since any statistical or mathematical transformations of the dependent variable, such as project success or the degree of success, change the very nature of interest, namely the pattern of project overfunding. This study utilized multiple perspectives provided through robust logit regression models and the Blinder-Oaxaca decomposition, in combination with multiple thresholds for project overfunding that jointly addressed this methodological flaw. However, not indicated in this study is the comparison of extreme cases, such as projects that exceed the initial target by multiple times to projects that are 'only' successful. Purposively gathering data on projects that exceeded their funding goal by very large margins and comparing them to projects exceeding the funding goal by small margins could constitute a promising approach for further studies.

A further methodological limitation is the role of endogeneity related to project success. The number of comments and updates is most likely higher for successful projects since success provides a reason for project founders to post updates or for backers to congratulate the project founders on their success in the comment section. However, a vast majority of previous studies include these independent variables in regression analyses without discussing endogeneity issues. This especially renders regression analyses that aim to determine factors differentiating successful from unsuccessful projects a rather unprecise and potentially biased approach. However, considering overfunded crowdfunding projects, the underlying assumption of a potential endogenous relationship between the mentioned independent variables and the dependent variable, overfunding, diminishes. Overfunded projects are a subset of successful projects, such that there is a comparable incentive by the project founders to provide updates, or that a higher number of backers leads to a higher number of comments. Thus, for this study's focal subject of interest, project overfunding, endogeneity issues are most likely strongly reduced compared to studies investigating success factors.

Beyond methodological limitations, this study is limited by the explanatory power of the collected data, which primarily includes factors that are determined by the project team. Hence, this study covers two central constituents in the context of the signaling theory – the project team as a signaller and selected signals. Yet, the third key constituent, the crowd, is not observed in this study. Therefore, not only the perspective of the project founders but also the perspective of the crowd has to be taken into account, constituting a subset in a signaling environment addressing the receiving end of the signals. Complementarily to the psychological perspective of the project team, as introduced in the discussion, also psychological aspects of the backers may be further investigated to explore project overfunding. Zhang and Chen (2019) find that both egoistic and altruistic motivations play a role in the backers' decision to support a project, with egoistic motivation prevailing. Some projects might be able to stimulate altruistic motivation that contributes to overfunding, for instance, those that are considered to be turning a project into reality that is a 'dream' of backers (Ahrens et al., 2019) and projects that are perceived as more creative (Davis et al., 2017). For these projects, the motivation to support can be driven by the desire to 'make the product happen' (Zvilichovsky et al., 2018). Thereby, backers might assume that more financial resources for the project team increase the chance that their 'dream' is successfully implemented and thus are motivated to support the project even beyond the funding goal. Colistra and Duvall (2017) find that being part of the project, which is a perception relevant to the project's implementation, motivates backers to provide funding. This may invigorate the desire to make the product happen and contribute to the motivation to provide funding even once the initial funding goal has been reached.

A further topic that is often neglected is the characteristics of the crowd, for instance, of the core target group of a given project, such as the individual composition of the crowd. For the related concept of crowdsourcing, the characteristics of the crowd are already subject to broad and thorough research (e.g., Afuah & Tucci, 2012; Frey et al., 2011), but the relationship between crowd characteristics and project success is not yet investigated by thorough crowdfunding research, let alone the potential relationship to project overfunding. For instance, it can be argued that if projects succeed in attracting backers with a high purchasing power due to available financial resources, and if these backers are able to more precisely assess the project quality due to their experience or familiarity with the project domain, they could provide more funding and thus ultimately contribute to project overfunding. A promising avenue for further research is thus to assess whether and which crowd compositions impact project overfunding.

Further, related to the perspective of the crowd, the vast majority of studies in the field of crowdfunding focus on data available on individual crowdfunding project websites, which results in data that is available *after* the supporters contributed to a project. A novel perspective on crowdfunding could be gained by conducting a survey or interviews among potential supporters, addressing their decision *before* supporting a project, thereby differentiating projects that have not yet reached their funding goals and others that already received more funding than initially targeted. This approach could deliver new insights about the relative importance of factors contributing to both project success and overfunding, and furthermore, unveil yet neglected factors.

To conclude, a central limitation of this study concerns the nature of the factors considered in the presented analyses, which is that the studied factors are rather objectively measurable. However, this limitation offers guidance for avenues of future research. As such, considering factors on a more fine-grained level and delineating more specific signals, in particular taking into account a more subjective perspective on the perception of these signals, may provide evidence for factors determining project overfunding. In view of the signaling theory, future research is encouraged to define sets of signals, such as in this study the basic quality indicators, signals to create trust, and signals that relate to network-related aspects, and define subsets within these sets which (i) are necessary basics for project success, and (ii) may contribute not only to success but in addition to overfunding, or exclusively to overfunding.

An appendix summarizes the discussion of the results and the indicated factors for future research that may have an impact on project overfunding. Thereby, this study offers both a theoretical and empirical groundwork for future research to build upon in order to identify the determinants of overfunding in reward-based crowdfunding projects.

Appendix: Project success factors and suggested factors with a potential impact on project overfunding

Signal sets	Project success	Potential impact on project overfunding	Sources
<i>Signaller (Project Founders) Perspective</i>			
Basic quality indicators			
Visual Cues (Availability of Videos / Pictures)	n.s. / +	<ul style="list-style-type: none"> • Picture and video quality • Content of pitch video (e.g., demonstrating entrepreneurial passion) • Communicate level of innovativeness/creativity of the project idea 	Chan and Parhankangas (2017), Davis et al. (2017), Jiang et al. (2019), J. J. Li et al. (2017)

Signal sets	Project success	Potential impact on project overfunding	Sources
Number of Updates	+	<ul style="list-style-type: none"> Content, quality, and sentiment of updates 	Block, Hornuf, and Moritz (2018), Xu et al. (2014)
Number of Comments	+	<ul style="list-style-type: none"> Sentiment, length, reply speed 	Wang et al. (2018)
Number of Rewards	+	<ul style="list-style-type: none"> Attractiveness of rewards Pricing decision for different rewards (price discrimination) 	Bender et al. (2019), Hu et al. (2015), Lin et al. (2016)
Network			
Number of Founders	+	<ul style="list-style-type: none"> Size of the personal network of founders (friends, strong or weak ties) 	Borst et al. (2018), Mollick (2014)
Availability of Social Media	+	<ul style="list-style-type: none"> Creating social media hype ('buzz') Size of social and personal network Strategic use of social media 	Datta et al. (2018), Kromidha and Robson (2016), Thies et al. (2014), Summers et al. (2016)
Trust			
Number of Words in Project Description	n.s.	<ul style="list-style-type: none"> Linguistic Style Narrative of the project (e.g., realizing a 'dream') 	Ahrens et al. (2019), Allison et al. (2017), Mitra and Gilbert (2014), Parhankangas and Renko (2017), Zhou et al. (2018)
Founder characteristics	n.o.	<ul style="list-style-type: none"> Experience of project founders (crowdfunding or professional experience) Internal social capital, positive psychological capital Team composition (e.g., gender) Personality characteristics 	Allison et al. (2017), Anglin, Short, et al. (2018), Anglin, Wolfe, et al. (2018), Davies and Giovannetti (2018), Neuhaus et al. (2021), Ullah and Zhou (2020)
<i>Receiver (Crowd) Perspective</i>			
Perception of project and of own contribution	n.o.	<ul style="list-style-type: none"> Desire for project realization Individual contribution matters Altruism Perception of product newness, attractiveness and/or usefulness Be part of a community 	Kraus et al. (2016), Kuppuswamy and Bayus (2017), Gerber et al. (2012), Y. Li et al. (2019), Rose et al. (2020), Steigenberger (2017), Zvilichovsky et al. (2018)
Crowd characteristics	n.o.	<ul style="list-style-type: none"> Crowdfunding experience Familiarity with the project or the project domain Availability of financial resources (e.g., age and employment status) 	Gerber and Hui (2013)

Note: The column "Project Success" illustrates the findings of this study; Abbreviations refer to the following: n.s. = not significant, n.o. = not observed, + = positive impact observed.

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Abstrakt

CEL: *Chociaż istnieje bogata literatura na temat kluczowych czynników warunkujących sukces finansowania społecznościowego opartego na nagrodach, niewiele badań poświęcono projektom finansowania społecznościowego, które nie tylko odnoszą sukces, ale otrzymują znacznie więcej środków niż początkowo zakładano w określonym celu finansowania. Niniejsze badanie ma na celu rzucenie światła na ten bardzo zaniedbany temat w badaniach finansowania społecznościowego.* **METODYKA:** *Opierając się na bogatym zbiorze danych 338 projektów crowdfundingowych opartych na nagrodach, w badaniu zastosowano dwuetapową analizę statystyczną. Po pierwsze, przeprowadzono analizy regresji w celu określenia odpowiednich czynników sukcesu finansowania społecznościowego, aby potwierdzić istniejącą literaturę i podkreślić, że dane właściwie odzwierciedlają już zidentyfikowane kluczowe ustalenia dotyczące sukcesu finansowania społecznościowego. W drugim kroku te same czynniki zostały zbadane w przypadku projektów nadmiernie finansowanych, wykorzystując analizy regresji logistycznej i dekompozycję Blindera-Oaxaca.* **WYNIKI:** *Chociaż to badanie potwierdziło wyniki wcześniejszych badań dotyczących czynników zwiększających prawdopodobieństwo sukcesu projektów crowdfundingowych, te same czynniki okazały się nie wyjaśniać pojawienia się nadmiernego finansowania projektów. Na przykład, chociaż twórcy projektów mogą dostarczać aktualizacje, większą liczbę różnych nagród lub wykorzystywać strony mediów społecznościowych w celu zwiększenia prawdopodobieństwa sukcesu, to czynniki te nie przyczyniają się do wyjaśnienia zjawiska nadmiernego finansowania projektów.* **IMPLIKACJE:** *Wyniki tego badania podkreślają, że aby zrozumieć nadmierne finansowanie projektów crowdfundingowych, przyszłe badania muszą wykraczać poza podstawowe czynniki sukcesu finansowania społecznościowego. Opierając się na koncepcji teorii dwóch czynników, odkrycia sugerują, że czynniki przyczyniające się do sukcesu można uznać za czynniki higieny, które są niezbędne do odniesienia sukcesu w pierwszej kolejności. Jednak te czynniki nie motywują tłumu do dalszego finansowania już udanego projektu. Stąd czynniki motywujące pozostają niezauważone w zachowanej literaturze. W praktyce oznacza to, że zespoły projektowe osiągające swój cel finansowania nie mogą polegać na tych samych czynnikach, które pomogły w zachęceniu tłumu do dalszego finansowania. Różnicowanie czynników higienicznych i motywujących do nadmiernego finansowania w finansowaniu społecznościowym opartym na nagrodach oferuje bogate możliwości dla przyszłych badań. Sugeruje się, że istotną rolę w przypadku nadmiernego finansowania projektów odgrywają bardziej subiektywne czynniki, takie jak indywidualne postrzeganie przez członków społeczności projektów crowdfundingowych.* **ORYGINALNOŚĆ/WARTOŚĆ:** *Badając nadmierne finansowanie projektów, niniejsze badanie uwzględni lukę badawczą dotyczącą czynników przyczyniających się do pojawienia się nadmiernego finansowania projektów. Niewiele jest dowodów na charakterystykę nadmiernie finansowanych projektów crowdfundingowych, a zatem niniejsze badanie dostarcza niezbędnych podstaw teoretycznych i empirycznych dla przyszłych badań, które będą opierać się na wynikach tego badania.* **Słowa kluczowe:** *crowdfunding oparty na nagrodach, overfunding, przedsięwzięcia biznesowe, przedsiębiorczość, czynniki sukcesu, teoria dwóch czynników.*

Biographical note

Felix Pinkow holds a Master of Science in Management from University of Mannheim. Since 2018, he works as a Research Associate and Ph.D. candidate at the Chair of Technology and Innovation Management, Technische Universität Berlin. His primary research interests concern creativity and creative thinking processes, in particular the relationship between affect and creativity. Further research topics include open innovation, crowdsourcing, and crowdfunding. His work was presented at international conferences, such as the Innovation and Product Development Management Conference, the JPIM Research Forum, and the Open and User Innovation Conference.

Conflicts of interest

The author declares no conflict of interest.

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