PERSONALITY MATTERS: HOW SIGNALING PERSONALITY TRAITS CAN INFLUENCE THE ADOPTION AND DIFFUSION OF CROWDFUNDING CAMPAIGNS

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Recommended Citation

Thies, Ferdinand; Wessel, Michael; Rudolph, Jan; and Benlian, Alexander, "PERSONALITY MATTERS: HOW SIGNALING PERSONALITY TRAITS CAN INFLUENCE THE ADOPTION AND DIFFUSION OF CROWDFUNDING CAMPAIGNS" (2016). Research Papers. 36.  
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PERSONALITY MATTERS: HOW SIGNALING PERSONALITY TRAITS CAN INFLUENCE THE ADOPTION AND DIFFUSION OF CROWDFUNDING CAMPAIGNS

Research

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Abstract

The rapidly growing crowdfunding market allows individuals and organizations to raise funds for a diversity of projects. Potential investors, however, face uncertainties about the quality of the projects as well as the characteristics and behavioral intentions of the project creators due to a lack of publicly available and unbiased information. By analyzing 33,420 crowdfunding campaigns running on Kickstarter from January to August in 2015, we find that campaigns of project creators who are able to signal certain personality traits through their project description and video are more likely to succeed and to be shared via social media. More specifically, project creators who are able to convey openness and agreeableness are more likely to succeed with the adoption and diffusion of their campaigns compared to those signaling neuroticism. Our findings demonstrate that potential investors pay close attention to the way project creators present themselves and their projects on crowdfunding platforms. Project creators should therefore evaluate how to best communicate the favorable aspects of their project through their project description and video. Implications for future research and practice are discussed.

Keywords: Crowdfunding, Personality Traits, Five-Factor Model, Text Analysis.

1 Introduction

Crowdfunding allows individuals as well as organizations to raise funds for a diversity of projects through an open call on the Internet. Contrary to the traditional approach of fundraising, crowdfunding is focused on collecting rather small contributions from a large number of individuals (Schwienbacher and Larralde, 2012). According to an industry report, the combined crowdfunding market was worth approximately $16 billion in 2014 and is predicted to grow 100 percent in 2015 (Massolution, 2015). The growing success and increased media attention for crowdfunding platforms such as Indiegogo and Kickstarter has made crowdfunding an increasingly attractive alternative for sourcing capital as well as marketing activities. This development resulted in significant attention for the concept among practitioners and academics alike.

As crowdfunding platforms are two-sided markets, network effects between project creators and investors (backers) are prevalent (Eisenmann et al., 2006). While project creators seek to attract backers by creating compelling campaigns, prospective backers often need to make their investment decisions based on limited and potentially biased information. Given that there is little to no publicly available
information such as customer reviews for backers to evaluate prior to the investment decision, the project description and video provided by the project creator on the campaign webpage become the primary source of information for backers. Therefore, the lack of credible and reliable information about the campaign and especially the project creator’s characteristics and behavioral intentions poses a serious risk for the backers. The inherent information asymmetry between project creators and backers can have a dampening effect on the backers’ decision to invest (Agrawal et al., 2014; Belleflamme et al., 2014). However, prior research in related fields suggests that in settings featuring high information asymmetry the ability to signal favorable aspects, such as reliability or potential success to prospective investors through the language of a proposal, can be a decisive factor in raising funds. For instance, within the context of initial public offerings, firms can reduce information asymmetries for potential investors through the wording of their prospectuses (e.g., Daily et al., 2005; Loughran and McDonald, 2013; Loughran and McDonald, 2011). Due to the limited amount of information available prior to the investments, the rhetoric used in these brochures can send signals to the market, which can ultimately increase the potential investor’s confidence or reduce the perceived risk.

Similarly, research on lending-based crowdfunding has shown that individuals signaling autonomy, competitive aggressiveness, or the willingness to take risks via their project description on the crowdfunding website are more likely to get funded compared to those signaling empathy or warmth (Allison et al., 2013; Herzenstein et al., 2011; Moss et al., 2015). These studies show that potential investors carefully consider the manner in which language is used to describe investment opportunities. It is well-accepted in psychology and marketing literature that human language reflects personality, thinking style, and emotional states of the authors (IBM Watson Developer Cloud, 2015). Still, the importance and effects of different personalities among individuals seeking funding has been largely overlooked. However, correlations between specific personality traits and the ability of individuals to convince potential investors can be expected, as an individual’s personality can be associated with different work-related attitudes and behaviors. For example, while some traits can be linked to persistence in achieving self-set work goals or organized and effective behaviors, others can be associated with low confidence and negative reactions to work-related stimuli (Bozionelos, 2004; Judge and Ilies, 2002; Costa et al., 1991; Devaraj et al., 2008). Personality traits can capture the mindset and behavior of an individual and prior research in areas such as entrepreneurship has shown that investors base a lot of their investment decision on the entrepreneurs themselves, by considering specific personality traits prior to investing (MacMillan et al., 1985; Sudek, 2006; Cardon et al., 2009; Chen et al., 2009).

However, research on the role of personality in reward-based crowdfunding remains scarce.

This paper seeks to fill this gap by investigating the language used in project descriptions and videos on Kickstarter, one of the largest reward-based crowdfunding platforms. We are using algorithms to infer the Big Five personality traits from project descriptions and video transcripts and study the effects of signaling different personality traits on the outcome of the respective campaign. Specifically, we operationalize the influence of particular personality traits and observe the effects on the adoption of the respective campaign in the market place and the diffusion in social media. Our research is guided by the following research questions:

**RQ 1:** How does signaling different personality traits on Kickstarter influence the funding decision of backers and ultimately the outcome of the respective crowdfunding campaign?

**RQ 2:** How does signaling different personality traits on Kickstarter influence the diffusion of the respective crowdfunding campaign in social media?

Our study offers important contributions to research and practice. First, it is among the first large-scale empirical studies to examine the effects of signaling specific personality traits. In doing so, we are able to show that prospective investors on crowdfunding platforms consider the personality traits reflected in the project descriptions and videos provided by the project creators for decision support. This study
therefore extends prior IS research, which was mainly concerned with the effects of different personality traits of individuals on their adoption and diffusion decisions (e.g., McElroy et al., 2007; Devaraj et al., 2008; Goswami et al., 2009). Second, it adds to the growing crowdfunding literature by showing that the way in which favorable and unfavorable personality traits are expressed in project descriptions and campaign videos can have a substantial influence on the prospective backers’ decision-making. Finally, and more broadly, our study builds on and enriches prior research on the Big Five personality traits (e.g., McElroy et al., 2007; Devaraj et al., 2008) and computer-aided text analysis (e.g., Short et al., 2010) to show that determining personality traits of individuals on a large scale using text analysis can open up new avenues for future research.

2 Theoretical Background and Prior Research

2.1 Personality and the Five-Factor Model

There is a growing stream of research on the effects of different personality traits in Information Systems (IS) research and in related disciplines. Researchers like McElroy et al. (2007) and Devaraj et al. (2008) encourage the IS research community to follow this endeavor as a deeper understanding of the different personality traits and their effects can not only help to conceptualize theory but also enables practitioners to better target their products and services.

Personality can be understood as a person’s individual combination of traits, unique facets as well as thoughts (Barrick and Mount, 1991; Devaraj et al., 2008). This dynamic set of characteristics therefore defines an individual’s cognition and behavior (Maddi, 1989; McElroy et al., 2007). In recent years, especially the technology acceptance and adoption community analyzed personality traits with respect to IS. For instance, Devaraj et al. (2008) examined the acceptance of collaborative technology solutions and found that personality traits influence the perceived usefulness and intention to use. Furthermore, researchers show that an individual’s personality plays a critical role when receiving and evaluating information about products or services (Jahng et al., 2002; Patrakosol and Lee, 2013). Different personalities value information and product presentation elements differently, which is reflected in their buying decisions (Jahng et al., 2002).

An adjacent stream of research, which contributes to the understanding of personality in our research context, is entrepreneurship. Here, controversial results on the role of personality exist. Some studies observe an entrepreneurial personality but do not find any correlation between different personalities and venture success (Stuart and Abetti, 1990). Other researchers, however, find a relationship between long-term venture survival and the entrepreneur’s conscientiousness (Ciavarella et al., 2004). Other studies suggest a link between a set of psychological attributes and financial performance (Begley and Boyd, 1988). Findings also show that entrepreneurs have a different personality in comparison to corporate managers and small business owners (Ciavarella et al., 2004; Stewart and Roth, 2001; Begley and Boyd, 1988). A high need for achievement, internal locus of control, and risk-taking propensity are common personality traits among entrepreneurs (Korunka et al., 2003). Miller (2015) and Klotz and Neubaum (2015), however, emphasize the dark side of personality that is largely unexplored. Some positive aspects of personality might transform into aggressiveness, narcissism, or ruthlessness, which might hamper the growth and success of a new venture. Taken together, different personality traits of entrepreneurs have an influence on the working style and aspects of growth as well as the presentation of the ventures themselves. It is therefore not surprising that investors such as angel investors base a lot of their investment decision on the entrepreneurs themselves and consider specific personality traits prior to investing (MacMillan et al., 1985; Sudek, 2006; Cardon et al., 2009; Chen et al., 2009).

In order to measure the personality of individuals, psychological trait theory has brought up several models. However, there is considerable agreement among researchers that all personality traits can be categorized in five major dimensions, often referred to as the Big Five (Goldberg, 1990). The corresponding model, called the Five-Factor model (FFM), is the most prevalent among researchers today.
It has been labeled as “the model of choice for the researcher wanting to represent the domain of personality variables broadly and systematically” (Briggs, 1992, p. 254).

<table>
<thead>
<tr>
<th>Big Five personality trait</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness</td>
<td>Imaginative versus down-to-earth, preference for variety versus preference for routine, independent versus confirming</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>Well organized versus disorganization, careful versus careless, self-disciplined versus weak-willed</td>
</tr>
<tr>
<td>Extraversion</td>
<td>Social versus retiring, fun-loving versus sober, affectionate versus reserved</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>Soft-hearted versus ruthless, trusting versus suspicious, helpful versus uncooperative</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>Worried versus calm, insecure versus secure, self-pitying versus self-satisfied</td>
</tr>
</tbody>
</table>

**Table 1.** Big Five personality traits and the associated characteristics (McCrae and Costa Jr, 1999; Lampe, 2004).

The FFM includes five primary personality traits (see Table 1): openness to experience (openness), conscientiousness, extraversion, agreeableness, and neuroticism (Goldberg, 1990; Costa et al., 1991). Trying new and different things as well as seeking for new experiences are key traits of individuals who score high in openness (McElroy et al., 2007; McCrae and Costa Jr, 1997; Judge and Ilies, 2002). These curious, open-minded, and creative personalities often come up with unconventional ideas and react flexibly to challenges, but are also more likely to question authority (Costa Jr and McCrae, 1995). Moreover, research suggests that people who score high in openness show a positive relationship between work accomplishment and self-set goals (Judge and Ilies, 2002).

Conscientiousness consists of tendencies to be intrinsically motivated, self-disciplined, and deliberate (McCrae and Costa Jr, 1999; Devaraj et al., 2008). Conscientious personalities are therefore achievement oriented, ambitious, and hardworking (McElroy et al., 2007; Barrick and Mount, 1991) and their plans are carried out very carefully with a focus on standards and norms (McCrae and Costa Jr, 1999). Highly social, optimistic, active, and cheerful personalities are described as being extraverted (Watson and Clark, 1997; McElroy et al., 2007). They are considered to be high performers in their work life and have the ability to work very well in teams (Barrick et al., 2001; Barrick and Mount, 1991). However, extraverted personalities have also been characterized as being impulsive and dominant (Watson and Clark, 1997; McElroy et al., 2007).

Individuals who score high in agreeableness are likable, helpful, kind, gentle, and sympathetic (McCrae and Costa Jr, 1999; Judge et al., 1999; Graziano and Eisenberg, 1997). Agreeableness therefore defines a soft-hearted, trusting, and cooperative personality. It also indicates that individuals enjoy interpersonal interaction and teamwork, especially if this means to help and cooperate with others (Barrick et al., 2001).

Anxious, sad, fearful, self-conscious, and paranoid individuals usually show high values in neuroticism (Judge et al., 1999; Bozionelos, 2004), while emotionally stable and well-adjusted people score low values (Devaraj et al., 2008). Neurotic personalities demonstrate a lack of psychological and emotional stability and can have difficulties in managing stress (McElroy et al., 2007). Neuroticism can therefore be associated with several negative reactions to both life and work situations and can impact perceived and actual job performance (Judge et al., 1999; Barrick et al., 2001).

Previous research shows that personality traits of individuals have an apparent and substantial influence on their behavior in a variety of contexts. However, prior IS research has almost exclusively been concerned with the personality of individuals and their varying adoption decisions. For example, researchers found that internet usage (McElroy et al., 2007) and the adoption of IT innovation depend on the individual’s personality (Goswami et al., 2009). To the best of our knowledge, no prior work has investigated the effects of signaling certain personality traits through text and video on the receiver’s decision-making processes.
2.2 Information Asymmetries in Reward-Based Crowdfunding

Crowdfunding is a subset of crowdsourcing that enables project creators to collect relatively small financial contributions from a large number of individuals through an open call on the internet (Schwienbacher and Larralde, 2012). It thus creates a large, relatively undefined network of project stakeholders and consequently decreases the importance of other investors such as venture capitalists. Crowdfunding also offers a variety of incentives for backers to “pledge” for a specific campaign. These incentives mainly depend on the return the backers can expect from their contributions, which range from donations to company equity (Ahlers et al., 2015). On Kickstarter, the most common and salient type of return is a so-called “reward” that often allows backers to be among the first customers to sample the product or service financed through the campaign. In this study, we focus on this so-called reward-based crowdfunding, as it is the most widespread concept of crowdfunding today.

Compared to other types of web services, reward-based crowdfunding is special as the investments made on crowdfunding platforms are especially risky as the return on investment is highly uncertain. This uncertainty results from the lack of a legal obligation to actually deliver the rewards to the backers. Also, the quality of the rewards remains unpredictable at the time the investment decision has to be made. The dynamics of crowdfunding are thus different from those in a traditional e-commerce setting between a seller and a buyer. Backers can be less certain that they will actually receive a return on their investment and have less information about the object they are investing in compared to a regular buying situation, in which the product or service already exists (Agrawal et al., 2014; Belleflamme et al., 2014).

Given that there is little to no publicly available information such as customer reviews to evaluate the investment ex-ante, backers’ primary source of information is the project description and video the creator has published on the campaign webpage. Even though this content allows prospective backers to develop an attitude towards the campaign and the comprised rewards, this attitude is potentially biased due to the fact that it stems from a single source of information (Burtch et al., 2013). As the project creator alone controls the flow of information towards the backer and is thus able to overstate quality or withholding information, information asymmetries may arise between prospective backers and project creators (Mavlanova et al., 2012). This results in situations, in which the project creator possesses information that the backer does not have and in which the backer is unaware of the characteristics (e.g., reliability) and behavioral intentions of the project creator. In order to help the parties overcome these information asymmetries, the backer can make inferences from credible signals sent by the project creator (Biswas and Biswas, 2004; Stiglitz, 1990). Signaling theory is therefore concerned with the understanding of why certain signals might be reliable and could thus be relevant to the consumer in buying situations (Spence, 1973). Signals, such as a product warranty, proved only to be credible if a seller offering a low quality has higher costs acquiring them compared to a seller offering a high quality (Connelly et al., 2011; Kirmani and Rao, 2000).

Prior research on lending-based and equity-based crowdfunding platforms has shown that project descriptions provided by the project creators can be credible signals for prospective backers. For instance, product creators who are able to signal autonomy, competitive aggressiveness, or the willingness to take risks through their rhetoric are more likely to receive funding (Galak et al., 2011; Moss et al., 2015; Allison et al., 2015; Ahlers et al., 2015). Though all of these studies make important contributions towards understanding how the language used in project description can help to overcome information asymmetries by signaling meaningful characteristics to prospective backers, our study extends this stream of research in three important ways. First, even though other crowdfunding models such as lending-based and equity-based crowdfunding have been considered, there are some fundamental differences in the dynamics of the different crowdfunding models and the results of previous studies might therefore not apply to our context (Beaulieu et al., 2015). Second, while other studies focused on the project descriptions, we also examine the language used in project videos. Third, ours is the first study to consider the full spectrum of personality traits reflected in the project descriptions, drawing on the comprehensive Five-Factor model of personality. Albeit personality traits reflected in
the project descriptions and videos might not represent the exact personality of an individual project creator (e.g., several project creators or other professionals might be the authors of a single project description), both information sources are the central means for project creators to express themselves to prospective backers. Therefore, the project description and video act as the face to the customer that can be manipulated by project creators in order to influence prospective backers. Previous research found that individuals are able to perceive personality cues from different types of media, including text and voice (Moon and Nass, 1996; Nass and Lee, 2001; Nass et al., 1995) and are subsequently affected in their decision-making (Al-Natour et al., 2006; Hess et al., 2009).

3 Research Methodology

In order to examine the personality traits reflected in project descriptions and videos, we first collected data from the world’s largest reward-based crowdfunding platform Kickstarter. We then sent each project description as well as video transcript to IBM’s Personality Insights service via the application programming interface (API). The IBM’s Personality Insights service is part of IBM’s Watson computer system and is able to infer the inherent Big Five personality traits based on written text 1. Third, we employed a probit regression model with the funding success as the binary dependent variable in order to assess the adoption of the campaigns. We then proceed to infer the diffusion of the campaign via social media, by employing a simple OLS regression with the natural logarithm of the number of Facebook shares as the dependent variable. We are therefore able to assess the influence of the different personality traits on the likelihood that prospective backers adopt a crowdfunding campaign or share it among their peers.

3.1 Dataset

Our dataset covers the period from January 18, 2015 to August 6, 2015 with a total of 47,526 crowdfunding campaigns on Kickstarter that started and ended within this timeframe. Following previous research, we removed campaigns with a funding goal below $100 or above $1,000,000 from the sample as these projects may have different characteristics from the majority of campaigns (Mollick, 2014). We also removed campaigns with project descriptions shorter than 100 words, because they are either incomplete or represent non-serious efforts to raise funds and, more importantly, IBM’s Personality Insights API requires a minimum text length of 100 words for the analysis. The final dataset consists of 33,420 campaigns, with 3,580,579 backers and approximately $324,300,000 in pledges, resulting in an average pledge of $90.50 per backer.

Besides the project description, the video, which is present on 63% of campaign webpages, is an integral part of many crowdfunding campaigns. We therefore used the Web Speech API 2 embedded in browsers such as Google Chrome to automatically transcribe the spoken words from the campaign videos into written text. This approach allowed us to transcribe almost 20,000 videos over the course of several weeks, which, due to the length requirements of IBM’s Personality Insights API, resulted in 12,859 video transcripts that could be analyzed. In order to validate the performance of this approach and the accuracy of the corresponding transcripts, we exploited the fact that campaign creators are able to add subtitles to their videos and a small fraction of project creators actually uses this feature. We were therefore able to compare the provided subtitles of 625 campaigns with the results from the automatic transcription. For this comparison, we used Soundex, a phonetic algorithm, which is a standard feature in most database software, and achieved an average concordance rate of 79% with a median value of 88% using a cosine similarity scoring.

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1 https://watson-pi-demo.mybluemix.net

2 https://dvcs.w3.org/hg/speech-api/raw-file/tip/speechapi.html
3.2 Measuring Personality Traits

An individual’s personality traits are usually measured using interviews or questionnaires. However, these approaches offer limited scalability (de Montjoye et al., 2013) and would therefore be impractical for this study considering the high number of campaigns in our dataset. An alternative, yet promising way to infer personality traits is monitoring the use of language, as personality has a so called "top-down influence" on a person’s conceptualized ideas (Fast and Funder, 2008, p. 334). In other words, the way in which an idea is put into words, allows the inference of a person’s personality (Fast and Funder, 2008). Therefore, automatic language-analyzing techniques bear a huge potential in identifying personality traits. In the course of automated language analysis, IBM recently launched Watson’s Personality Insights services, which can be used to measure an individual’s personality based on written text. IBM’s Watson is at the forefront of a new era of cognitive computing. The artificial intelligent computer system prominently showed its capabilities in fields such as medicine or finance but also competed publicly on the television game show “Jeopardy!” and won against former winners.

The service, which we incorporated in this study, uses linguistic analytics to infer the personality traits as well as intrinsic needs and values of individuals based on the words they are using in communications such as email, text messages, and forum posts (IBM Watson Developer Cloud, 2015). To infer the Big Five personality traits, the service uses the coefficients that are reported by Yarkoni (2010), derived by comparing personality scores that were obtained from surveys to Linguistic Inquiry and Word Count (LIWC). Many prior works used the LIWC psycholinguistics dictionary to find psychologically meaningful word categories from word usage in writings (Lin and Viswanathan, 2015; Tausczik and Pennebaker, 2010). Once text is sent to the Personality Insights service, it is tokenized and every token (word) is matched against the LIWC psycholinguistics dictionary in order to compute scores for every category of the dictionary. While self-reflective words about family, friends, work, feelings, and achievements as well as positive and negative emotions are used in this analysis, nouns such as names of people and places do not contribute to the personality inference (IBM Watson Developer Cloud, 2015).

For the sake of demonstration, we randomly selected one project description from Kickstarter about an innovative coffee grinder and show an excerpt of the input as well as the calculated output by IBM’s Personality Insights in Table 2. This text shows a high score in openness and conscientiousness, and low to medium values in neuroticism, extraversion, and agreeableness.

<table>
<thead>
<tr>
<th>Input (N=751 words)</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The idea to make a better coffee grinder started from something we called the ‘Crowdsourced Coffee Experiment’. We were attempting to apply a Japanese principle called Kaizen to our coffee routine. It wasn’t long before we learned how important a good grinder is to making better coffee so we purchased an entry-level manual grinder. The new burr grinder was a noticeable improvement over the blade grinder, however we couldn’t help but notice areas for improvement. Since Kaizen means continuous improvement we started to look for better options. Yet after searching the market and seeing the same ancient designs being repeated over and over we finally thought, we can do better. [...]”</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Example text and the output by Personality Insights.

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3 https://www.kickstarter.com/projects/handground/precision-coffee-grinder-better-grind-more-flavor/description
3.3 Variables

As Kickstarter is applying the “all or nothing” funding model, we choose to examine funding success as the outcome variable to measure the adoption, as a high number of backers or pledges does not necessarily reflect a successful Kickstarter campaign (Rakesh et al., 2015). For instance, although a campaign with 10,000 backers and $80,000 in pledges sounds successful, with a funding goal of $500,000, the project would still fail and all invested pledges would be refunded. On the other hand, a campaign with the same outcome and a funding goal of $50,000 can clearly be regarded as successful.

As our second dependent variable, we chose the number of Facebook shares to reflect the diffusion of the campaign in social media, which has often been regarded as a crucial success factor for crowdfunding campaigns (Thies et al., 2014; Mollick, 2014). As we are interested in the effects of personality traits reflected in the project descriptions and videos, we use the operationalized Big Five as our main independent variables: openness, conscientiousness, extraversion, agreeableness, and neuroticism. As mentioned before, our independent variables were gathered from the textual description of the project, as well as the automatically transcribed videos. Following prior research in crowdfunding (Burtch et al., 2013; Mollick, 2014; Wessel et al., 2015b) we use a set of control variables to account for alternative explanations. Our control variables include the campaign duration, the funding goal, whether it contains a video, the category and currency, update usage, number of user comments, and the length of the text description.

3.4 Model

As our first dependent variable funding success is dichotomous, a probit regression that specifies the probability of an outcome as a function of one or more independent variables is applicable (Cameron and Trivedi, 2005). We model the probability of a funding success depending on several basic crowdfunding variables and the personality traits. We follow Long (1997) and formalize our model:

\[ P_r(y=1|x) = \Phi(x\beta) \]

where \( F \) is the cumulative distribution function (\( \Phi \)) of the standard normal distribution for the probit model (Long, 1997). The probability of witnessing a binary event given \( x \) is the cumulative density evaluated at \( x\beta \). With our dichotomous dependent variable funding success, the model can therefore be described as following.

\[ P_r(\text{success} = 1|x) = \Phi(\beta_0 + \beta_currency + \beta_category + \beta_duration + \beta_update + \beta_9 \ln(\text{comments}) + \beta_8 \ln(\text{goal}) + \beta_7 \text{video} + \beta_6 \text{description length} + \beta_5 \text{openness} + \beta_1 \text{conscientiousness} + \beta_2 \text{extraversion} + \beta_3 \text{agreeableness} + \beta_4 \text{neuroticism}) + \epsilon_i \]

where \( \beta_i x_i \) represents the independent variables and their coefficient, while \( \epsilon \) acts as the error term.

Our second dependent variable, diffusion of the campaign, is the natural logarithm of Facebook Shares. We therefore use an OLS regression with robust standard errors (Cameron and Trivedi, 2005). The formulation is, analogous to the above, as follows:

\[ \ln(\text{Facebook Shares}) = \beta_0 + \beta_currency + \beta_category + \beta_duration + \beta_update + \beta_9 \ln(\text{comments}) + \beta_8 \ln(\text{goal}) + \beta_7 \text{video} + \beta_6 \text{description length} + \beta_5 \text{openness} + \beta_1 \text{conscientiousness} + \beta_2 \text{extraversion} + \beta_3 \text{agreeableness} + \beta_4 \text{neuroticism} + \epsilon_i \]

3.5 Robustness Checks

In order to check for the robustness of our research approach, we ran alternative specifications and sub samples. First, we used different dependent variables as a success measure including the natural logarithm of the funding amount using an OLS regression (Ahlers et al., 2015) and the number of campaign backers by applying a negative binominal regression (Wessel et al., 2015a). All results are in line with our original specification.
As IBM’s Watson service indicates that the accuracy of their service scales with the length of the text, we also ran our original analysis with a subsample of descriptions in the 50% and 75% quantile based on the description length, which came back with the same result patterns.

4 Results

Descriptive statistics and the correlation matrix can be found in Table 3. Campaigns on Kickstarter draw an average of 91.01 backers while accumulating an average of $9,239 in our observational period. The average funding goal is $25,329. In our data, 68% of the campaigns fail to reach their funding goal, while 32% succeed in the attempt to do so. Kickstarter is publicly recommending a 30-day campaign duration, while the mean campaign duration in our data is 32.4 days with a minimum of 1 day and a maximum of 73 days (Kickstarter, 2011). 63% of project creators upload a video for their campaign and project descriptions contain 561 words on average. Values of the different personality traits differ in project description or the project video. For example, the openness trait, derived from project descriptions shows on average a very high score, while the video transcribed scores show moderate average values. Still their correlation coefficients are relatively high, ranging from 0.37 to 0.47. On the other hand, extraversion scores much higher on videos than in the textual descriptions. The relatively high correlations in Table 3 between the different personality traits are in line with former research and studies (e.g., van der Linden et al., 2010; Anusic et al., 2009) and are well below the threshold level to be of serious concern for the regression analysis. Table 4 shows the results of the econometric analysis. Models 1 and 2 are probit regressions with funding success as their dependent variable. Models 3 and 4 analyze the diffusion of a campaign through social media with an OLS regression for the number of Facebook Shares. The first column (1-1) is the baseline model, including all control variables and previously studied success factors. We then added the calculated measurements of the different personality traits in the second column of each model. We will first look at the control variables and compare our results with prior literature on reward-based crowdfunding. The increase in campaign duration is negatively associated with its adoption, as it can most likely be seen as a sign for the lack of confidence. Further, an increase of the funding goal decreases the chances of success, as it becomes more difficult to gather enough support (Mollick, 2014). On the other hand, projects with a high funding goal tend to be shared more often on social media. It is therefore crucial to find a realistic project goal, as the reciprocal effect of social media impact and backing behavior can be of reinforcing nature (Thies et al., 2014). Although the coefficient for the number of words in a project description is small, it shows a positive association between the length of a description and the adoption of a campaign, the underlying intuition being that a longer and more detailed description reduces the existing information asymmetry between creator and backers, better than a shorter description (Wessel et al., 2015a).
<table>
<thead>
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Note: The number of observations for all variables is 35,420 (12,859 for campaigns with an eligible video). Summary statistics are presented in linear form for all variables. In the regressions the natural logarithm of Facebook Shares, Comments, and Funding Goal is used.
Additionally, both the existence of a video and providing an update show significant impact on a campaign’s chances of adoption and diffusion. Kickstarter highly recommends the creation of a project video in their frequently asked questions (FAQ). They also provide statistics, where the funding success rate of projects with a video are 50%, compared to a 30% for a campaign without a video (Kickstarter, 2015). While several studies reported that projects contain videos in 72% to 86% of all cases, having no video might be a signal for the lack of preparation (Mollick, 2014; Wessel et al., 2015a). Furthermore, an active discussion around the project, measured by the number of comments, also increases the project adoption and diffusion (Mollick, 2014). The coefficients in the base line models are therefore in line with prior research.

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<td>Video</td>
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<td>2.01*** (54.578)</td>
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Note: t statistics in parentheses. A constant is included but not reported. * p < 0.05, ** p < 0.01, *** p < 0.001.

Table 4. Results of the Probit and OLS regression.

As we are interested in the differential effects of personality traits reflected in project descriptions and video transcripts, we used the personality traits derived from the description text in model 1-2 and 3-2, while model 2-2 and 4-2 include personality traits based on the video transcripts. We will therefore...
now discuss our focal variables with respect to their effects on adoption and diffusion and whether their value stems from the project description or the video. With regard to the adoption of a crowdfunding campaign, openness, and agreeableness appear to be the driving factors, while neuroticism in the text description has a negative and significant impact. Conscientiousness and extraversion do not play a significant role in this context (Model 1 and 2). When considering Model 3 and 4, on the other hand, conscientiousness, and extraversion gain significance and become an important driver of diffusion. Again, neuroticism decreases diffusion as well as the adoption. With regard to the effects of videos, results are similar to the text descriptions, except that neuroticism is of no particular importance here.

5 Discussion and Contributions

This study was motivated by the observation that, despite prior research in the context of lending-based and equity-based crowdfunding, we know little about the differential effects of different personality traits reflected in the rhetoric used by project creators on crowdfunding platforms. We are able to show a strong link between personality traits and the adoption and diffusion of Kickstarter campaigns, by demonstrating that the way in which the Big Five personality traits are expressed in the project descriptions and videos has a substantial influence on the prospective backers’ decision-making. The results reveal that the personality traits openness and agreeableness are the main drivers of success, both in terms of the adoption as well as the diffusion of the campaign in social media, while conscientiousness and extraversion solely support the diffusion in social media. Neuroticism, on the other hand is detrimental for both adoption and diffusion, when signaled through the project description and should therefore be avoided by project creators wanting to create a successful campaign.

Our findings appear to be in line with prior research on personality traits, as people with a high score in openness are known to be creative, inventive, intelligent, and curious to experience new things (McCrae and Costa Jr, 1997). Prior studies have shown a positive association between openness and learning proficiency as well as the willingness to engage in learning experiences (Barrick et al., 2001). Further, Judge and Ilies (2002) found that individuals who score high in openness to experience show a positive relationship between work accomplishment and self-set goals. All these ascribed attributes do in fact reflect the very nature of crowdfunding campaigns. The second main driver, agreeableness, consists of tendencies to be helpful, gentle, trusting, and trustworthy (Graziano and Eisenberg, 1997) and prioritization of work and career success (Judge et al., 1999). These attributes, again, appear to be important factors for successful campaign creators and entrepreneurs. Especially trustworthiness plays a major role in crowdfunding due to high information asymmetries between campaign creators and potential investors. As we found only little difference between personalities in written and spoken language, our results are furthermore in line with the fundamental idea behind personality traits in general psychology, being that an individual’s personality can be determined by their vocabulary (Fast and Funder, 2008), which is most likely not changing when writing a text or speaking in a video.

Our study extends and completes research from different areas. First, prior studies in IS and human-computer interaction (HCI) found that individuals are able to perceive personality cues from different types of media, including text and voice, which we could confirm in our study (Hess et al., 2009; Moon and Nass, 1996; Nass et al., 1995; Nass and Lee, 2001). Second, research on lending-based crowdfunding has shown that individuals signaling autonomy, competitive aggressiveness, or the willingness to take risks via their project description on the crowdfunding website are more likely to get funded (Allison et al., 2013; Herzenstein et al., 2011; Moss et al., 2015). Third, the entrepreneurship literature showed that in the context of initial public offerings the rhetoric used by those seeking funding can send signals to the market, which can ultimately reduce information asymmetries (e.g., Daily et al., 2005; Loughran and McDonald, 2013; Loughran and McDonald, 2011).

Our study makes important contributions to these streams of research and offers valuable insights for practitioners. First, to the best of our knowledge, ours is among the first large-scale empirical studies to examine the effects of signaling specific personality traits. In doing so, we are able to show that in
crowdfunding the personality traits reflected in the project descriptions and videos are considered by prospective backers and used for decision support. This study therefore extends prior IS research, which was mainly concerned with the effects of different personality traits of individuals on their decision-making (e.g., McElroy et al., 2007; Devaraj et al., 2008). Second, it adds to the growing literature on crowdfunding by showing that the language used on campaign webpages can be a decisive factor for the success of crowdfunding campaigns and that specific personality traits such as openness and agreeableness can have a substantial influence on the prospective backers’ decision-making when reflected in the project creators’ rhetoric. Finally, and more broadly, our study builds on and enriches prior research on the Big Five personality traits and computer-aided text analysis (e.g., Short et al., 2010) to show that determining personality traits of individuals on a large scale using text analysis can open up new avenues for future research. We therefore encourage scholars to apply such means for further studies in other contexts such as e-commerce, marketing, or related fields in order to evaluate the role of personality traits in these settings.

6 Limitations, Future Research, and Conclusion

While our study provides important contributions to research and practice, we acknowledge certain limitations that have to be considered when interpreting the results and implications. In calling attention to these limitations, we hope to simultaneously suggest avenues for future research. First, although reward-based crowdfunding platforms share many characteristics with other multi-sided and e-commerce platforms, in particular the presentation of products or services with videos and text-based descriptions, crowdfunding certainly attracts a different audience, making our findings not directly transferable to different contexts. Therefore, our findings and methodology should be validated in other settings. Second, we focused our attention on the personality traits reflected in project descriptions and videos. Obviously, other characteristics of these two information sources such as the formatting of the text or the visual component of the video can have an influence on the reader or viewer. Therefore, the analysis of these mediums is far from conclusive, but they do offer promising avenues for future research. Furthermore, we are aware of the fact that project descriptions and videos will often contain thoughts and attitudes from a group of project creators or even marketing experts rather than from a single individual. This means that the personality traits inferred from the project description and video transcript might not necessarily represent the actual personality of a specific individual. Third, due to length and methodology constraints, we focused on the Big Five personality traits that offer a broader taxonomy of an individuals’ personality. However, Costa Jr and McCrae (1995) offer a more fine-grained classification of these personality traits and distinguish six facets within each of the five dimensions that should be considered in future studies for a more detailed analysis.

Finally, regarding our research methodology, some additional limitations should be considered. First, the usage of an external service such as IBM Watson or the Web Speech API should always be viewed with caution, as the underlying inferences are not fully transparent. Second, an individual’s personality traits are usually measured using interviews or questionnaires (e.g., Barrick and Mount, 1991; Gosling et al., 2003; Judge and Ilies, 2002). Even though our data-driven approach offers several advantages (e.g., cost-effectiveness, scalability, overcoming the intention-behavior gap), it needs further confirmation in other contexts. A combination of both approaches might provide a fruitful research field and could validate our results and methodology. Third, the quality of the video transcripts could be improved, as background noise or low quality recordings can negatively influence the transcription.

In conclusion, this study is an initial step towards understanding the effects of different personality traits reflected in project descriptions and videos in the context of reward-based crowdfunding. We hope to open up avenues for future research in this field, by demonstrating that the data-driven approach to measuring personality traits offers valuable predictive power for the assessment of the adoption in the market place as well as the diffusion of crowdfunding campaigns in social media.
References


