Exploring the success factors for crowdfunding platforms.

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Predicting success for Voordekunst.

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Abstract

Crowdfunding is a relatively new and emerging approach for collecting funding for a project. This study explores the potential success factors for crowdfunding campaigns. Based on previous findings in literature about crowdfunding platforms and the knowledge of domain experts, potential success factors are collected. The factors are: the goal amount for the project, the length of the project description, the number of images on the campaign page, the number of posted updates, the number of options for rewards in exchange for a donation and the discipline of the project. Using data from the Dutch platform Voordekunst, the factors are analysed. We show with this data analysis that the number of updates and the number of rewards can significantly increase the probability of success of a campaign.

Contents

1 Introduction

Crowdfunding is a relatively new and emerging approach for collecting funding for a project. This collection is done by raising money from large audiences, where each individual can donate a small amount of money (Belleflamme et al., 2014). In exchange for a donation, a campaign owner often offers their funders a reward. Crowdfunding generally involves three different stakeholders, the campaign owner who sets up the project, the "crowd" that funds the project and the platform that connects these parties (Belleflamme et al., 2014). The more traditional way of funding includes investors, venture capital firms or initial public offerings (Short et al., 2017). Crowdfunding platforms are often on the internet and therefore, there are no geographical limitations for funders, which can be a benefit compared to funding the traditional way (Mollick, 2014).

The goal of this research is to understand the factors that predict the success and failure for crowdfunding campaigns. There are various papers on success factors for different crowdfunding platforms. Most research is based on Kickstarter[1], the largest American crowdfunding platform. This research is based on the platform Voordekunst[2] ("For the Arts"), a Dutch crowdfunding platform for the cultural sector. The main differences between Voordekunst and Kickstarter are the domain and the size of the target audience. The main language of Voordekunst is Dutch and therefore the campaigns are targeted on a Dutch audience only. The main language of Kickstarter is English and therefore the platform can reach a broader audience from different countries. Furthermore, Voordekunst is only available for projects in the cultural sector, which makes the platform different than other platforms. Kickstarter is available for projects of all disciplines. From results of previous papers there are already some success factors known for other crowdfunding platforms. The difference between Voordekunst and other platforms suggest that the success factors are not necessarily applicable for campaigns of Voordekunst. Therefore, this research explores the applicability of the success factors of campaigns from large platforms such as Kickstarter, on local platforms, such as Voordekunst.

Knowing the success factors for campaigns has two main benefits. For crowdfunding platforms it is interesting to know the success factors because this makes giving targeted feedback to clients possible. The targeted feedback can lead to more successful projects, which leads to general improvement of the platform. For the entrepreneurs is is also interesting to know what increases their chance on success when starting a crowdfunding campaign.

The research question for this study is: "What factors predict the success of Dutch crowdfunding campaigns in the arts domain?". The answer to this question will be divided in three sub-questions. Sub-question 1: "Which success factors for crowdfunding platforms are derivable from a literature review?", sub-question 2: "What do domain experts say about successful campaigns of Voordekunst?" and sub-question 3: "What factors follow from data analysis on data from Voordekunst projects?".

2 Background

A more specific introduction to Voordekunst and the details of how Voordekunst operates will be given in section 2.1. Voordekunst will also be compared to the other platforms that are used for this paper in section 2.2.

[1] https://www.kickstarter.com/
[2] https://www.voordekunst.nl/

2.1 Introduction Voordekunst

Voordekunst is a crowdfunding platform for the creative sector and was founded in 2010. The main requirement to start a campaign on the platform is that the project has to be art related. The possible disciplines for the projects are Music, Theatre, Movies, Dance, Heritage, Visual Arts, Photography, Publications, Media and Design. Campaign owners have to upload their goal amount, project discipline and a description of the project when signing up for a new campaign on Voordekunst. Based on the answers, Voordekunst asks questions and gives feedback with the intention of increasing the chance of success.

Figure 1a and Figure 1b show the format of a campaign page on Voordekunst. Figure 1a is a general overview of a page with the abstracted features of a project and Figure 1b is an example of a real project. Every campaign page on Voordekunst includes a title, a goal amount, a duration for the campaign, a project description, a video, rewards and updates (optionally). Before the campaign starts, the campaign owner has to decide the goal amount for funding and the duration of the campaign. The project description is the text the campaign owner writes to introduce the project. This text can also contain images. All campaign owners also make a video where they can introduce the project. Lengths of the project description and lengths of the video vary per campaign. The campaign owner can also choose the number of rewards options that are added in exchange for donations. The rewards depend on the number of the donation and can vary between a thank you note and the full product the campaign is funding for. Furthermore, after launching the page, the campaign owners are able to update their page. By updating the page, it is possible to show progress or changes. Updating is not obligated for campaigns on Voordekunst. These are all factors the campaign owner can control, but there are also factors they cannot control, such as the donated amount, the number of donors and their posted reactions.

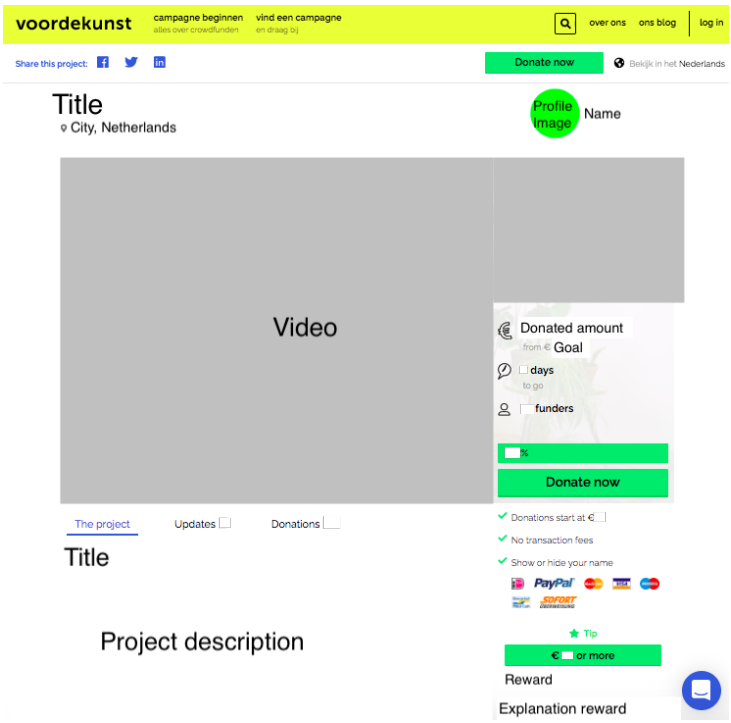

Figure 1 (a) The abstracted features of a campaign page of Voordekunst.

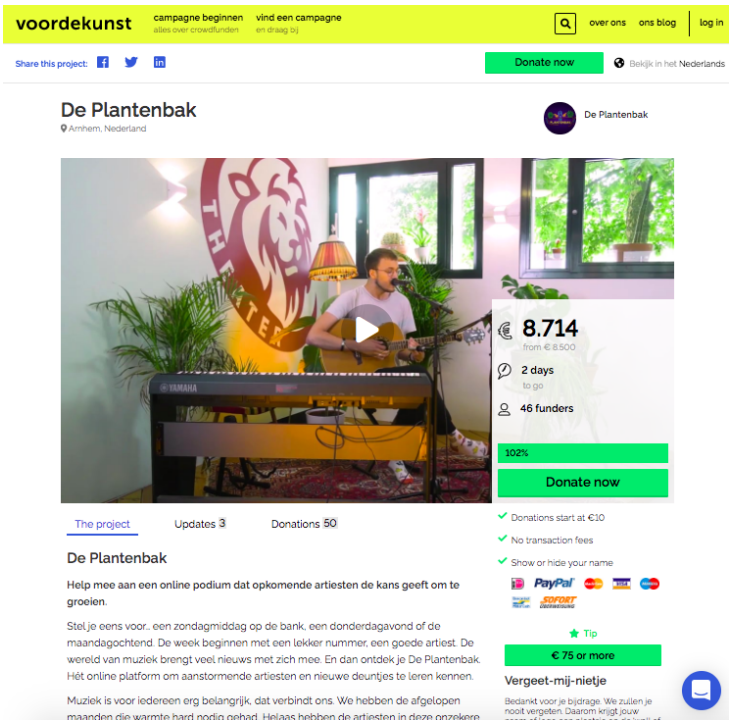

Figure 1 (b) An example of a real campaign on Voordekunst[a].

[a]https://www.voordekunst.nl/projecten/11231-stift-plantenbak

Figure 1: Examples of campaign pages on Voordekunst.

A campaign is considered successful if the goal amount is completely donated. Voordekunst has an all-or-nothing reward system. This means that the campaign owner receives all donations when the goal is completed, but if the goal is not completed the campaign owner receives nothing. In this case, the funders receive a full refund. When the duration of the campaign is over and 80-99% of the goal is donated, the duration can be extended.

2.2 Comparison to other crowdfunding platforms

For the literature research on success of Voordekunst campaigns, papers on success factors of various other crowdfunding platforms are used. To compare the results of these papers, it is useful to show the differences between these various platforms. The platforms used for the literature review in this research are Kickstarter[3], Startnext[4] and a selection of 11 Italian platforms. Kickstarter is world's largest crowdfunding platform and most literature about crowdfunding is based on data from Kickstarter campaigns. Startnext is now the largest crowdfunding platform for German speaking countries. An overview of the papers used for analysing the success factors within each platform is given in Table 1.

[3]https://www.kickstarter.com/
[4]https://www.startnext.com/

Reference	Voordekunst	Kickstarter	Startnext	Italian platforms
Borst et al. (2018)	X			
Crosetto and Regner (2014)			X	
Giudici et al. (2013)				X
Koch and Siering (2015)		X		
Kunz et al. (2016)			X	
McNeill et al. (2018)		X		
Mitra and Gilbert (2014)		X		
Mollick (2014)		X		

Table 1: The used references and which platform they cover.

Table 2 shows the comparison of the different platforms. The platforms are compared by the year the platform was founded, the domain of the campaigns on the platform, the country the platform was founded, the total amount of money that is collected until now, the number of successful projects on the platform, the success percentage of their campaigns, the reward system and whether the presence of a video is obligated. For a more specific explanation of this comparison, the features are also explained and illustrated below.

	Voordekunst[a]	**Kickstarter**[b]	**Startnext**[c]
Founded	2010	2009	2010
Domain	Art	All	All
Country	Netherlands	United States	Germany
Target audience	Local	International	Local
Money collected	€31.8 million	$5.5 billion	€106.8 million
Successful projects	4,658	195,298	11,034
Success percentage	More than 80%	38.37%	54%
Reward system	All-or-nothing	All-or-nothing	All-or-nothing
Video obligated	Yes	No	No

[a]About Voordekunst, available at: https://www.voordekunst.nl/paginas/over-ons (Accessed: 26 January 2021)
[b]Kickstarter Stats, available at: https://www.kickstarter.com/help/stats?ref=global-footer (Accessed: 26 January 2021)
[c]Startnext, available at: https://www.startnext.com/ (Accessed: 26 January 2021)

Table 2: Comparison of the used crowdfunding platforms.

- **Founded:** Voordekunst, Kickstarter and Startnext were all founded around the same time. Voordekunst and Startnext were founded in 2010 and Kickstarter in 2009.
- **Domain:** Voordekunst is orientated on the creative sector, which means the projects of Voordekunst are all art related. The domain of Kickstarter and Startnext is broader, projects of all sectors are allowed here.
- **Country:** Voordekunst is a Dutch platform with their main language for project descriptions in Dutch. This means the targeted crowd for Voordekunst is Dutch speaking, a local audience. Startnext is a German platform and their main language for project descriptions is German. This means the target audience for Startnext is also local. Kickstarter is founded in the United States and their main language is English. This makes it possible to reach a broader audience, because more people understand English than Dutch or German. There is also one paper used that has analysed 11 Italian platforms (Giudici et al., 2013). The language

of these platforms are Italian, so the target of these platforms is an Italian speaking crowd. This makes them local platforms, similar to Voordekunst and Startnext.

- **Collected money and successful projects:** Voordekunst has collected €31 million, Kickstarter $5.5 billion and Startnext €104 million. To collect these amounts of money, Voordekunst has finished 4,658 successful projects, Kickstarter finished 195,298 and Startnext 11,034.
- **Success rate:** The difference in the success rates is remarkably high. From the campaigns of Voordekunst more than 80% succeeds, for Kickstarter and Startnext this success rate is lower, namely 39% and 54% respectively.
- **Reward system**: The three crowdfunding platforms have the same reward system, where the campaign owner receives all donations when the campaign is successful and nothing otherwise.
- **Video obligated:** For projects on Voordekunst it is obligated to make an introductory video. On Kickstarter and Startnext it is strongly recommended to add a video to your campaign page, but not obligated. This makes it possible to do research to the effects of the presence of a video on success for Kickstarter and Startnext projects, but not for Voordekunst projects.

3 Method

To answer the main research question, the three sub-questions have to be answered. Sub-question 1: "Which success factors for crowdfunding platforms are derivable from a literature review?", will be answered through a literature review in section 4.2, sub-question 2: "What do domain experts say about successful campaigns of Voordekunst" will be answered through the knowledge of domain experts in section 4.3 and sub-question 3: "What factors follow from data analysis on data from Voordekunst projects?" through the data of Voordekunst campaign pages in section 5.2. After answering the first two sub-questions, it is possible to make hypotheses for the third sub-question. The hypotheses are given in section 4.4.

3.1 Literature

There are various relevant papers about predicting success factors for crowdfunding campaigns. The papers are based on data from the platforms Kickstarter, Startnext, Voordekunst or a combination of 11 Italian platforms, which are introduced in chapter 2. The results of these papers will be combined in our literature review.

Based on the papers about other crowdfunding platforms, it is possible to make a list of potential factors that predict success for crowdfunding platforms in general. The assumption is made that the information collected by the literature review, is possibly transferable on the platform Voordekunst. The literature results can be compared to the results from the data analysis on Voordekunst data to verify or reject the hypotheses about the potential success factors.

3.2 Domain experts

Domain experts from Voordekunst share their knowledge about factors that will possibly predict success for their campaigns. This additional information can help by making the hypotheses for the success factors. The results of the data analysis will also be discussed during and after the research for validation purposes.

3.3 Data

Voordekunst provided a dataset of 2955 campaigns for this research, that fit the structural description as described in section 2.1. The dataset is further visualised in section 5.1. All projects started between January 2016 and December 2019, so they were already finished at the time of this research. The data was delivered as HTML files of the website pages of the campaigns. To process the data, the Python package Beautiful Soup is used. This package is a widely used library for scraping web content, which makes it possible to select all information that was posted on the campaign pages.

To analyse what features are correlated with the success of crowdfunding campaigns, various researchers have performed a logistic regression (Crosetto and Regner, 2014), (Lukkarinen et al., 2016), (Greenberg et al., 2013), (Mitra and Gilbert, 2014), (Mollick, 2014), (Agrawal et al., 2013). To be able to compare the literature findings to the data of Voordekunst campaigns, a logistic regression is also performed for this research. The variables used for the logistic regression are based on the findings of the literature. The possible disciplines for the projects of Voordekunst are all added as dummy variables. For the logistic regression the data is randomly separated in 25% for the training set and 75% for the test set, by using the scikit-learn library in Python.

4 Domain exploration

In this chapter, the first two research questions are answered. The first sub-question: "Which success factors for crowdfunding platforms are derivable from a literature review?", is answered in section 4.2. Before answering this question, the literature overview is given in section 4.1. The second sub-question: "What do domain experts say about successful campaigns of Voordekunst?", is answered in section 4.3. Based on the results from the literature review and the knowledge of the domain experts, the hypotheses are given in section 4.4

4.1 Literature overview

The papers used for the literature review propose possible success factors for crowdfunding platforms. Every paper has used data from one of the platforms introduced in section 2.2. In Table 3 the potential success factors and their corresponding platforms and references are shown.

Variable	Platform(s)	References
Goal amount	Italian platforms, Kickstarter, Startnext	Crosetto and Regner (2014), Forbes et al. (2017), Giudici et al. (2013), Koch and Siering (2015), Mollick (2014)
Project description	Kickstarter	Crosetto and Regner (2014), Koch and Siering (2015), Kunz et al. (2016), Mollick (2014)
Images	Kickstarter, Startnext	Crosetto and Regner (2014), Koch and Siering (2015)
Updates	Kickstarter, Startnext	Crosetto and Regner (2014), Koch and Siering (2015), Kunz et al. (2016), Mitra and Gilbert (2014), Mollick (2014),
Rewards	Kickstarter, Startnext	Crosetto and Regner (2014), Forbes et al. (2017), Kunz et al. (2016)
Videos	Kickstarter, Startnext	Crosetto and Regner (2014), Koch and Siering (2015), Kunz et al. (2016), McNeill et al. (2018), Mollick (2014)
Social media posts	Kickstarter, Voordekunst	Borst et al. (2018), Etter et al. (2013)
Network of project owner	Italian platforms, Kickstarter, Voordekunst	Borst et al. (2018), Giudici et al. (2013), Mollick (2014)

Table 3: Features extracted from literature and their references.

The paper of Borst et al. (2018) is used for the literature review about the effect of social media posts. Because their research was also based on Voordekunst data, it is interesting to know the differences between their dataset and the one used for this research. The dataset differs in the period of the starting date of the projects, the number of projects and the success rate.

Our dataset consists of projects that started in 2016 until 2019, theirs of projects that started in January 2013 until June 2013. Our dataset contains 2955 projects, the dataset of Borst et al. (2018) contains 271. The success rate also differs significantly. In our dataset, 83% of the projects were successful and in the dataset of Borst et al. (2018) this is 75% of the projects. The differences are summarised in Table 4.

	Our dataset	Borst et al. (2018)
Period	Jan 2016 - Dec 2019	Jan 2013 - June 2013
Number of projects	2955	271
Success rate	83%	75%

Table 4: Dataset comparison with Borst et al. (2018).

The differences in the success rate and the period of the start dates of the projects suggest that the success on Voordekunst has increased over time. The results of Borst et al. (2018) are still

relevant and will be taken in account but they are not necessarily completely applicable because of the possibly outdated data.

4.2 Literature results

Various factors that could influence the chance of success for crowdfunding projects are described in this section. There is also an explanation given about whether the influence is positive or negative. The discussed factors are the goal amount, the project description, images, updates, rewards, videos, social media posts, and the network of the project owner.

4.2.1 Goal amount

Koch and Siering (2015) suggest that a high goal amount implies a high risk for potential funders because there are more donations needed before the goal is completed. A higher goal also implies a higher complexity of the project, which also makes the project harder to succeed (Koch and Siering, 2015).

The results from the logistic regressions from Koch and Siering (2015) and Mollick (2014) on Kickstarter data, from Crosetto and Regner (2014) on Startnext data and from Giudici et al. (2013) on data from 11 Italian platforms, confirm that the goal amount decreases the chance on success. Furthermore, Forbes et al. (2017) have interviewed students about success factors for campaign pages of Kickstarter. From the answers in the interview could also be concluded that the goal amount must be as low as possible.

4.2.2 Project description

Campaign owners are in charge of the project description. Through the project description, potential funders can learn about the content of the project. The amount of information in a text has a positive influence on the utility for its readers (Koch and Siering, 2015). Therefore, Koch and Siering (2015) suggest that the depth of the project description has a positive impact on the success of funding. After testing this theory on the Kickstarter data, they could conclude that more words in the project description contributes to the funding success. Crosetto and Regner (2014) have found the same results for Startnext campaigns. However, Kunz et al. (2016) did not find a significant relation between the length of the description and success after analysing Kickstarter data.

Mollick (2014) has used the presence of spelling errors in his research into funding success on Kickstarter data. Given the various options for spell checkers, spelling errors generally indicate reduced preparedness and quality of the project. Results of analysing the Kickstarter data show that the chance of success for projects with spelling errors is 13% less than projects without spelling errors (Mollick, 2014).

4.2.3 Images

The presence of images on a webpage has a positive influence on the duration of visitors on the page (Danaher et al., 2006). Images and other graphical content draw attention for visitors on a campaign page. Besides drawing attention, images can also increase the chance of this visitor supporting the campaign. Crosetto and Regner (2014) have found a positive correlation between success and the number of images on the Startnext project pages. Koch and Siering (2015) have found the same results for Kickstarter project pages.

4.2.4 Updates

When signing up for a new campaign, Kickstarter suggests that providing updates about your project increases your chances of success (Mollick, 2014). The project description is written before the project starts and does not give information about the progress. Only visitors who believe in the project directly will fund the project after reading the project description (Koch and Siering, 2015). For visitors who have some doubts, updates with evidence of progress could persuade them that the project has a chance of reaching the funding goal, and thus convince them to fund the project (Koch and Siering, 2015).

Mollick (2014), Koch and Siering (2015) and Mitra and Gilbert (2014) have confirmed these theories by analysing data of Kickstarter projects. Mollick (2014) discovered that Kickstarter project pages that are updated early have a 13% greater chance of success than projects that are not. Koch and Siering (2015) and Mitra and Gilbert (2014) also found that updating the campaign page is highly correlated with success. These updates can be posted any time in the process. Kunz et al. (2016) and Crosetto and Regner (2014) found the same results for the projects of Startnext and Borst et al. (2018) for the projects of Voordekunst.

4.2.5 Rewards

Belleflamme et al. (2014) explain that crowdfunding is associated with community-based experiences and it generates community benefits for participants. Crosetto and Regner (2014) argue that some rewards could function as such community feelings, especially when the support of the funder becomes visible through the reward. They also suggest that rewards that potentially provide social-image boosts for themselves or for the creator, have a positive effect on funders. Kunz et al. (2016) also suggest that projects that have a higher minimum option for a donation, attract fewer funders.

After analysing Startnext projects, Kunz et al. (2016) and Crosetto and Regner (2014) also found a positive correlation between success and the number of rewards offered by the creator. Furthermore, Forbes et al. (2017) concluded that more and creative options for rewards have a positive effect on the chances of success, based on the interviews about Kickstarter campaign pages.

4.2.6 Videos

Kickstarter suggests that including a video on your project page is one of the most important steps in preparing your project (Mollick, 2014). If someone visits the project page, it is likely that the visitor watches the video before reading the description because watching a video is less labor-intensive than reading the same information (Koch and Siering, 2015). If no video is present, visitors might not try to gather information about this project, which often results in not funding the project (Koch and Siering, 2015).

Videos are a solution for providing information that is not possible to show with text and images only (Jiang and Benbasat, 2007). Videos can also make use of temporal visual change and audio fragments that can give a more realistic experience of the product to the watcher than images do (Jiang and Benbasat, 2007). Furthermore, McNeill et al. (2018) suggest that the length of the video has a positive effect on a project's chances of receiving funding.

By analysing the Kickstarter data, Mollick (2014) found that projects that do not include a video have 26% less chance of success than projects that do. Koch and Siering (2015) have also analysed Kickstarter data and concluded that the impact of videos is highly significant and has a positive influence on the viewer. Kunz et al. (2016) and Crosetto and Regner (2014) have also found a positive relation between the presence of a video and success for the campaigns from Startnext.

4.2.7 Social media posts

Borst et al. (2018) have done research to the effect of social media posts on Facebook and Twitter on success in crowdfunding. The use of social media posts is a way to reach potential funders that are not from the own network. Based on data from Voordekunst campaigns, they found a positive relation between the number of social media posts and success. Etter et al. (2013) also suggest that the number of social media posts is a predictor for success, based on the data of Kickstarter projects.

4.2.8 Network of project owner

In general, the social networks of entrepreneurs are considered important for the chance of success in starting a new business or project. For investors it is always tricky to invest in new projects, because they do not possess all information about the entrepreneurs and their opportunities (Shane and Cable, 2002). However, for entrepreneurs it is not possible to achieve their goals without investors. Social networks of entrepreneurs are important because they can fill this gap partially (Shane and Cable, 2002).

Giudici et al. (2013) did research to the role of social networks in finding funders for crowdfunding campaigns. The data of their research consists of projects from 11 Italian crowdfunding platforms. They found that the size of the social capital of the campaign owner has a positive influence on the probability of success. Social capital is defined as someone's network combined with the assets available for this network (Giudici et al., 2013).

From the data analysis of Mollick (2014) also follows that the number of Facebook friends is positively correlated with success of Kickstarter campaigns. If the project owner has a large network, it is also likely the social media posts of the project owner will be seen by a great audience. However, Mollick (2014) acknowledges that the funding cannot be provided by the personal network only. Borst et al. (2018) also found that successful campaigns have a higher proportion of funders that are not from the own network than unsuccessful campaigns.

4.3 Analysis of the domain experts

To gain better understanding of the platform Voordekunst, various steps are taken together with the domain experts of Voordekunst. There has been close contact with Voordekunst and there were many possibilities to ask questions, such as questions about the hypotheses for success factors for Voordekunst campaigns. The domain experts can also validate the results, covered in section 5.3.

The intake procedure is studied by walking through an application for a test campaign. Furthermore, the internal documentation for basic controls for new campaigns is read. From the internal documentation follows that there are various factors Voordekunst keeps in mind during the application. The are questions about are the goal amount, the network, the description text, the rewards, the video and the duration of the campaign. A few examples of questions that are stated in the internal documentation, are illustrated below.

- **Goal amount**: Is the goal amount realistic? If the goal is high, then the campaign owner needs a communication plan.
- **Description text**: Is the goal clear after reading the text? Is the text structured and not too long?
- **Rewards**: Are there enough rewards options?

- **Video**: Does the video fit the campaign? Is the video personal enough? Is the length of the video not too long?
- **Network**: How is the personal network? Most donations come from the own network, so this needs to be good.

These questions suggest some hypotheses. The goal amount should not be too high, the description text should not be too long, the number of rewards must be high, the video should not be too long and a big personal network is necessary. There are no specific questions asked varying per discipline. This suggests that the discipline of the project does not effect the chance of success.

When asking the domain experts explicitly for hypotheses, the main hypothesis of the domain experts was that the size of the personal network of the campaign owner has a strong positive effect on chances of success of their projects. Because Voordekunst is not actively collecting specific data about the size of the network, the hypothesis about the network cannot be tested with the data.

4.4 Hypotheses

Based on the literature review covered in section 4.2 and the knowledge of domain experts covered in section 4.3, it is possible to state the hypotheses. Table 5 shows whether the hypotheses are based on the literature review, the domain experts or both.

H1: The goal amount has a negative influence on the probability of success.

H2a: The length of the description has a positive influence on the probability of success.

H2b: The length of the description has a negative influence on the probability of success.

H3: The number of images on the campaign page has a positive influence on the probability of success.

H4: The number of updates has a positive influence on the probability of success.

H5: The number of rewards has a positive influence on the probability of success.

H6: The discipline of the project does not effect the probability of success.

H7: The presence of a video on the campaign page has a positive influence on the probability of success.

H8: The number of social media posts has a positive influence on the probability of success.

H9: The size of the network has a positive influence on success.

	Factor	**Literature review**	**Domain experts**
H1	Goal	X	X
H2a	Description	X	
H2b	Description		X
H3	Images	X	
H4	Updates	X	
H5	Rewards	X	X
H6	Categories		X
H7	Video	X	X
H8	Social media posts	X	
H9	Network	X	X

Table 5: Hypotheses and what they are based on.

H1-H6 are the hypotheses that are further explored based on the data in the next chapter. H7 cannot be further explored because all Voordekunst campaigns have a video on their page. Because there is no data available of the social media posts and the network of the campaign owner, H8 and H9 are also not possible to verify with the further data exploration.

5 Experiment

The hypotheses can be tested on the available data of Voordekunst campaigns. In section 5.1 an overview of the dataset is given. This overview shows the percentages of successful projects per discipline and explains all variables used for the logistic regression. In section 5.2 the results of the logistic regression are illustrated.

5.1 Overview Data

For this research 2955 projects that started between January 2016 and December 2019 were analysed. In Figure 2 is shown how many projects per discipline have completed their goal successfully. In Figure 2a, the absolute amount of completed and failed projects are shown and in Figure 2b the normalised bars are shown so you can see the percentage of successful projects per discipline.

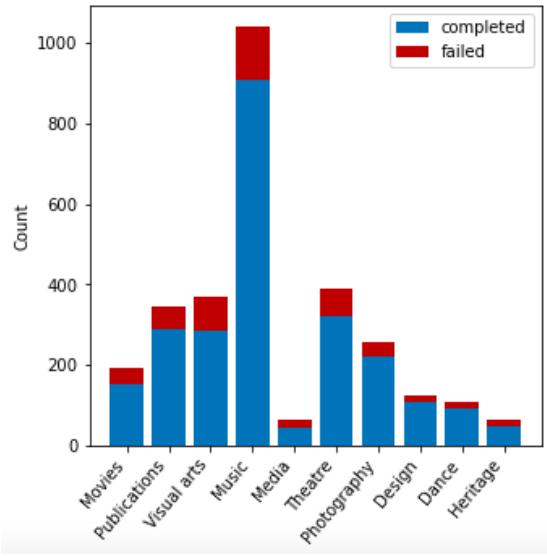

Figure 2 (a) The absolute count of successful campaigns per discipline.

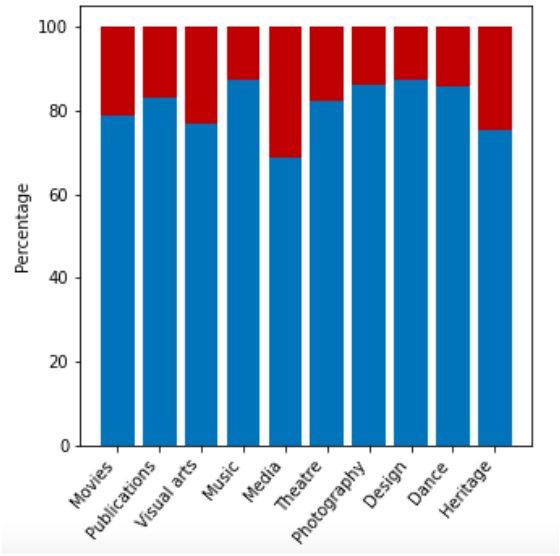

Figure 2 (b) Success percentages of campaigns per discipline.

Figure 2: Successes and failures of campaigns per discipline.

The variables analysed in this research are success, the project goal, the donated amount, the number of rewards, the number of images, the number of updates and the number of words. These variables are chosen based on the literature review in section 4.2 and the domain knowledge from section 4.3. For a better understanding of the dataset, the donated amount is also added to the overview. The definitions of the variables are explained as follows.

- **Success**: If the project is successfully completed, the value for this variable equals 1, otherwise the value equals 0.
- **Goal**: The goal of money (in €) the creator wants to raise with the crowdfunding.
- **Donated amount**: The amount of the money donated at the end of a campaign.

- **Number of Words**: The number of words of the project description on the campaign page.
- **Number of Images**: The number of images that are shown on the campaign page.
- **Number of Updates**: The number of times the project owner has posted an update on the campaign page.
- **Number of Rewards**: The number of options for rewards the creator gives in exchange of a donation.

In Table 6 the averages of the used features are shown per year in the dataset. The values are similar for the different years, therefore there are no biases caused by differences per year.

Year	Success	Goal	Words	Images	Updates	Rewards
2016	0.82	6184.06	522.89	7.34	4.34	8.48
2017	0.83	6290.99	517.45	7.24	5.05	8.39
2018	0.85	6663.91	531.97	7.36	4.67	8.57
2019	0.84	6613.63	545.23	7.57	4.01	8.59

Table 6: Averages of variables per year.

The descriptive statistics of the used data sample are shown in Table 7. The goal amount for the projects is approximately €6,450 on average. The highest project goal was €80,000 and the lowest equals €1,000. However, the donated amounts are slightly lower with an average of approximately €5,670. The lowest amount of donated money is €0, which means there was no donation for that project. The highest donation is €83,735, which is higher than the highest goal. This means some campaigns collect more money than their original goal.

The number of rewards varies between 3 and 21, with an average of 8.5. Concerning the updates, the minimum amount equals 0 and the highest amount of updates is 53. The median equals 3, which means half of the projects have 3 or less updates on their campaign page. Furthermore, the number of words varies between 0 and 4,220 with an average of 530.

Variable	mean	st. dev.	min	median	max
Success	0.83	0.37	0	1	1
Goal	6,453.47	6,495.57	1,000	5,000	80,000
Donated Amount	5,671.76	6,186.31	0	4,330	83,735
Number of Words	529.68	354.00	0	450	4,220
Number of Images	7.38	8.19	0	5	102
Number of Updates	4.52	4.87	0	3	53
Number of Rewards	8.50	2.31	3	8	21

Table 7: Descriptive statistics.

In Table 8 the correlations between all explanatory variables are shown. The highest correlation between variables is the correlation between the number of updates and the number of images, which equals to 0.65. Sometimes an image is included in an update post, which can explain this correlation. All other correlations between the explanatory variables are less than 0.32, which means they are not highly correlated.

	Variable	1	2	3	4	5	6
1	Success	1.00					
2	Goal	-0.10	1.00				
3	Number of Words	0.01	0.14	1.00			
4	Number of Images	0.16	0.11	0.32	1.00		
5	Number of Updates	0.26	0.15	0.18	0.65	1.00	
6	Number of Rewards	0.13	0.22	0.26	0.23	0.22	1.00

Table 8: Correlations between the explanatory variables

5.2 Results data

To compare the various variables for successful and unsuccessful campaigns, the averages of the variables are shown in Table 9. The variables where the averages differ a great amount are the goal amount, the donated amount and the number of updates. The average goal amount of the unsuccessful projects is approximately €2,000 higher than for the successful projects. However, the donated amount for the unsuccessful projects is approximately €5,000 lower. Furthermore, the average number of updates is 5 for the successful campaigns and only 1.66 for the unsuccessful campaigns.

Variable	Successful	Unsuccessful	All projects
Success	1	0	0.83
Goal	6,152.23	7,976.31	6,453.47
Donated Amount	6,550.89	1,227.50	5,671.76
Number of Words	528.00	538.15	529.68
Number of Images	7.34	7.56	7.38
Number of Updates	5.01	1.66	4.52
Number of Rewards	8.49	8.53	8.50

Table 9: Comparison of the averages of variables for successful and unsuccessful campaigns.

The results of the logistic regression with success as dependent variable, performed on the data of the Voordekunst projects are shown in Table 10. For each variable, the corresponding hypothesis is also added. The variables goal amount, number of images and number of rewards are significant at the 0.001 level. The number of words in the project description is significant at the 0.05 level and the other variables are not significant. For the significant variables it is possible to draw a conclusion about the correlation between the variable and success. The significance levels are also shown in Table 10.

The goal amount and the number of words in the project description are negatively correlated with success. This means that a higher goal for a project decreases the chance of success. A long description also decreases the chance on success.

The number of updates and the number of rewards are positively correlated with success. This means that projects increase their chance on success by updating their page and offering more reward options.

The correlation between the number of images and success is not significant, thus there is insufficient evidence the number of images and success are correlated. All categories that are added as dummy variables are also not significant correlated with success. This means that there is also no sufficient evidence that the disciplines have an effect on the chances of success.

Dep. Variable:			Success	No. Observations:			2216
Model:			Logit	Df Residuals:			2201
Method:			MLE	Df Model:			14
Date:			Thu, 7 Jan 2021	Pseudo R-squ.:			0.1727
Time:			15:53:53	Log-Likelihood:			-829.57
Converged:			True	LL-Null:			-1002.7
Covariance Type:			nonrubust	LLr p-value:			2.456e-65
		coef	std err	z	P > |z|	[0.025	0.975]
H1:	Goal	-5.443e-05	9.24e-06	-5.889	0.000**	-7.25e-05	-3.63e-05
H2:	Words	-0.0005	0.000	-2.397	0.017*	-0.001	-8.31e-05
H3:	Images	-0.0024	0.016	-0.147	0.883	-0.034	0.030
H4:	Updates	0.3613	0.034	10.693	0.000**	0.295	0.428
H5:	Rewards	0.1176	0.032	3.655	0.000**	0.055	0.181
H6:	Music	0.5170	0.270	1.912	0.056	-0.013	1.047
H6:	Theatre	0.3382	0.277	1.220	0.223	-0.205	0.882
H6:	Movies	0.1103	0.331	0.333	0.739	-0.539	0.706
H6:	Dance	0.6078	0.409	1.485	0.137	-0.194	1.410
H6:	Heritage	-0.1865	0.458	-0.407	0.684	-1.084	0.711
H6:	Visual Arts	-0.1871	0.289	-0.646	0.518	-0.754	0.380
H6:	Photography	0.0103	0.332	0.031	0.975	-0.640	0.661
H6:	Publications	-0.2059	0.303	-0.680	0.497	-0.800	0.388
H6:	Media	-0.7776	0.435	-1.788	0.074	-1.630	0.075
H6:	Design	0.7472	0.413	1.810	0.070	-0.062	1.556

Significance levels: $* = 0.05$, $** = 0.001$

Table 10: Output logistic regression

5.3 Analysing results

In section 4.4 six hypotheses are given that are further explored with the data analysis. The hypotheses can now be accepted or rejected based on the results of the logistic regression in section 5.2.

H1: "The goal amount has a negative influence on the probability of success", H4: "The number of updates has a positive influence on the probability of success", H5: "The number of rewards has a positive influence on the probability of success" are accepted by the results of the logistic regression on Voordekunst data, because the relation is significant and as expected. The differences between the values for the goal amount and the number of updates for successful and unsuccessful campaigns, given in Table 9, are also in line with these hypotheses.

Because the number of words is significantly and negatively correlated with success, H2a: "The length of the description has a positive influence on the probability of success" must be rejected and H2b: "The length of the description has a negative influence on the probability of success" can be accepted. This means that the hypothesis from the domain experts is accepted and the hypothesis from the literature review on other platforms is rejected.

H3: "The number of images on the campaign page has a positive influence on success" is rejected because the correlation between the number of images and success is not significant. The correlations between success and all disciplines are also not significant, which means that H6: "The discipline of the project does not effect the probability of success" can be accepted.

6 Discussion

The comparability of this research to similar papers on crowdfunding platforms is high, because other papers have also used a logistic regression for determining the success factors for the crowdfunding platforms.

According to the literature and the knowledge of the domain experts of Voordekunst, the number of social media posts and the network of the campaign owner are important factors for predicting a successful campaign. Because there was no available data for the network of campaign owners and the social media posts, these factors were not included in this research. Nevertheless, it is an interesting finding from the literature review and the domain experts that the number of social media posts (H8) and the size of the network (H9) have a positive influence on the chance of success for crowdfunding campaigns.

The qualitative aspects of the success factors are not entirely in scope of this paper. The information collected by the domain experts suggested mainly qualitative hypotheses, which could not all be tested with the available data. The presence of a video on the campaign page resulted from the literature review as a potential success factor (H7). Because all campaign pages on Voordekunst include a video, this factor is not tested in this research. The hypotheses from the domain experts were that the video must be personal and fit the campaign. The length of the video also must be not too long. The length of the video is a concrete variable and therefore something that could be tested in the future, but the level of personality and whether the video fits the campaign are harder to use as variables.

Furthermore, the results show that the number of updates and rewards have a positive effect on the chance of success for campaigns, but not how many updates or rewards are the optimal amount. There was also no available data of the time the updates were posted and the time the donations were made. The knowledge of the combination of the time of an update and the following donations could show interesting insights about the effect of updates. Besides an optimal number of updates, there could also be an optimal moment for posting updates.

The content and quality of the campaign and the people involved are still important aspects for the success of campaigns. The findings of this research cannot ensure a successful project but can only help with optimising the process of a crowdfunding campaign.

7 Conclusion

For this research the following question was asked: "What factors predict the success of Dutch crowdfunding campaigns in the arts domain?". To answer this question, the potential factors were based on a literature review and the knowledge of domain experts of the crowdfunding platform Voordekunst. The hypotheses that followed from the literature and the domain experts are stated below.

H1: The goal amount has a negative influence on the probability of success.

H2a: The length of the description has a positive influence on the probability of success.

H2b: The length of the description has a negative influence on the probability of success.

H3: The number of images on the campaign page has a positive influence on the probability of success.

H4: The number of updates has a positive influence on the probability of success.

H5: The number of rewards has a positive influence on the probability of success.

H6: The discipline of the project does not effect the probability of success.

H7: The presence of a video on the campaign page has a positive influence on the probability of success.

H8: The number of social media posts has a positive influence on the probability of success.

H9: The size of the network has a positive influence on success.

Using the data of Voordekunst, we can confirm some previous findings of success factors for crowdfunding campaigns. The influence of the goal amount (H1), the updates (H4), the rewards (H5) and the discipline of the project (H6) are the same as the influence of previous findings and therefore confirmed by this analysis. The goal amount has a negative influence on the probability of success, and the updates and the rewards have a positive influence. The discipline of the crowdfunding campaign does not effect the chance of success.

The results about the effect of the number of words in the project description (H2a) and the number of images (H3) on the campaign page are not as expected based on the literature review. The effect of the number of words was according to previous findings a positive influence on the chance of success. Our results show that a long description has a negative influence on the chance of success. However, this confirms the theory of the domain experts (H2b), who suggested that the text should not be too long. The effect of the images was not significant for the projects in this research although the previous literature findings are that the number of images has a positive influence on the probability of success.

The results of this paper are relevant for both campaign owners and for crowdfunding platforms. Campaign owners can learn how to design their campaign efficiently. Crowdfunding platforms can gain insights on how to give useful feedback to campaigns owners.

8 Recommendations and Future work

Based on the results of this paper, we are able to propose some recommendations for Voordekunst, which are discussed in section 8.1. The paper also leaves multiple options for future research, discussed in section 8.2.

8.1 Recommendations

For the goal amount is recommended that it should be as low as possible, such that all costs are explainable. For the number of words in the project description is recommended that it should not be excessive, but text that is necessary should not be deleted only to lower the number of words. Campaign owners should post multiple updates to inform and/or persuade potential funders. A variety of rewards per campaign page is also recommended, preferably with a low minimum option.

Furthermore, we found that the presence of a video on a campaign page and the size of the network of the campaign owners are important factors for predicting success. Therefore, the obligation of the video on a campaign page should stay and collecting data of the network would be helpful and also opens up new directions for future research.

8.2 Future work

We left multiple options for future research. In section 4.4 there are nine hypotheses proposed, of which six are tested in this research. The hypotheses that are not tested are: H7: "The presence of a video on the campaign page has a positive influence on the probability of success", H8: "The number of social media posts has a positive influence on the probability of success" and H9: "The

size of the network has a positive influence on success". These hypotheses could not be tested because our data was unsuitable, therefore we leave testing this to future research.

The effect of the presence of a video (H7) on success cannot be tested on the data of Voordekunst campaigns in the future because all campaigns include a video. However, other future work on our data could be analysing the content of the videos with the use of computer vision techniques and the length of the video could be added as a variable in the logistic regression.

Regarding the influence of social media posts (H8), and the size of the network of the campaign owner (H9), Borst et al. (2018) have already attempted answering these hypotheses. However, it could be interesting to research the exact function of the social media posts and the social network. What might be a suitable approach is dividing the network in the social and professional network.

Furthermore, it might be valuable to further explore the the effect of posting updates. The combination of the time of the updates and the following donations could show the exact effects of updates for instance. This could lead to the finding of an optimal number of updates and optimal moments for posting them.

From the used dataset, 4.5% of the artists returned with a second campaign on Voordekunst. This could be an interesting factor to further explore. The reason for returning for artists could be the success of their previous projects or they could return for the complete opposite reason, because they failed last time and want to try again.

The text of the project description can also be analysed with the use of natural language processing. A technique that can be used is for instance sentiment analysis, which measures the level of positivity and negativity of a text. The hypotheses could go in multiple directions because on the one hand the texts have to explain the urgency of the fundraising, which makes the descriptions probably partly negative. On the other hand, the description should contain positivity because the text should also be stimulating potential funders to donate.

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