

**REWARD-BASED CROWDFUNDING: INVESTIGATING THE INFLUENCE OF
THE NUMBER OF REWARD TIERS ON BACKERS**

By

Renée (Zhi) Pang

**An essay submitted to the Department of Economics in partial fulfillment of the
requirements for the degree of Master of Arts**

Queen's University

Kingston, Ontario, Canada

August 2019

Copyright © Renée (Zhi) Pang 2019

ACKNOWLEDGEMENTS

I would like to sincerely thank Professor Rob Clark for his feedback, support and guidance throughout this essay adventure. I am extremely grateful to the amazing MA cohort for suffering with me and supporting each other through the toughest year of our lives together. Mostly by laughing, crying, but mainly crying together – thank you for all the joyous memories. Lastly, I would like to thank Vivian Chu for her mental and emotional support throughout the last year, without her I would not have been able to complete my Master’s degree, much less my essay.

ABSTRACT

In this paper I will examine whether increasing the number of reward tiers in a reward-based crowdfunding campaign will see to an increase in backers pledging into a tier offering. The majority of the academic body has focused on factors influencing the probability of success while little research has been conducted in exploring backers' decisions. The few that have studied the impact of reward tiers on backers' decisions provide conflicting outcomes. I will attempt to bridge these conflicting findings in the crowdfunding literature by focusing on creative projects from the Film and Videos category on Kickstarter, one of the world's largest reward-based crowdfunding platform. My findings suggest that increasing the number of reward tiers does have a positive relationship with backers' decisions, only if the average value of the tiers do not increase.

Table of Contents

ACKNOWLEDGEMENTS	i
ABSTRACT	ii
1. Introduction	1
2. Background	3
2.1 Definitions	3
2.2 Crowdfunding types.....	4
2.3 How Kickstarter works	6
3. Literature Review	9
4. Data	14
4.1 Data Collection	14
4.2 Variables	16
5. Model and Results	26
5.1 The Model.....	26
5.2 Results and Analysis.....	28
5.3 Robustness Check	33
5.4 Practical Implications	35
5.5 Limitations and Future Work.....	36
6. Conclusion.....	37
References	38

1. Introduction

With the advent of Web 2.0, online collaboration, interaction and transactions have never been easier, resulting in a novel funding method: crowdfunding. This innovative process takes soliciting for capital or donations to the cloud, allowing for more funding avenues for entrepreneurs and non-profits. Unlike the traditional financing method involving loans through banks, investors and venture capitalists or through soliciting donations in-person, crowdfunding offers entrepreneurs a virtual showroom to present and pitch their ideas to any individual online. The collective group of individuals who are actively interested in contributing money to realize the entrepreneur's product or cause is referred to as the *crowd* in crowdfunding. Whether it is from pure altruism or in exchange for some reward, equity or social recognition, from 2012 to 2016, crowdfunding has raised over \$34 billion USD globally (The Startups Team, 2018; Fundly, 2017).

The exponential growth surrounding the crowdfunding business model and the increasing number of diverse online platforms has drawn overwhelming interest from multiple academic disciplines, particularly in the business management field. As it is a nascent business phenomenon, early studies have predominantly focused on defining the different forms of crowdfunding, and on qualitative, correlative and survey analysis. Recently, more empirical studies have been published examining the relationship between campaign and creator characteristics on the success of the project with some findings disagreeing with each other. However, research on how backers react to specific campaign characteristics is still limited, with only a few authors exploring the effects reward structures and types of rewards have on pledging behavior.

This paper intends to fill this gap by investigating whether increasing the number of reward options will lead to more backers supporting the campaign via selecting a reward offer. I examine backers' responsiveness to campaign reward schemes using ordinary least squares regression controlling for project and entrepreneur characteristics. The dataset consists of 7,968 projects web scraped from the Film and Videos category on Kickstarter, a reward-based crowdfunding platform. Since this is observational data, the assignment of campaigns is not random as it is the project creators' choice to use crowdfunding instead of traditional financing methods. Also, the way backers search for campaigns to support may not be completely randomized as the search engine can be optimized with preferential options such as sorting by the funding raised. Therefore, there are endogeneity biases present in the form of self-selection and partial simultaneity. I control for the endogeneity problem by exploiting the variability and randomness present in the tier schemes of projects that are comparable in creator choice characteristics such as the funding goal and film-type. My findings suggest that more reward options do have a positive influence on backers' opting into a reward tier, with one caveat: the average value of the scheme does not increase.

The remainder of this paper is presented as follows. In Section 2, I will first define the crowdfunding phenomenon, its different frameworks then delve into detail on the crowdfunding process on Kickstarter. In Section 3, I will explain my data collection process, the key variables and some interesting descriptive statistics. The model, results and limitations will be presented in Section 4. Finally, Section 5 will conclude with the research implications for reward scheme designs in influencing backers' decisions.

2. Background

2.1 Definitions

Crowdfunding is an extension of crowdsourcing (Poetz & Schreier, 2012) with the innovative twist of micro financing (Mollick, 2014). Crowdsourcing is defined as outsourcing an objective or task, traditionally performed by a certain agent, to the “crowd”, a collective group of individuals contributing their ideas, feedback or expertise to the project (Hardy, 2013; Howe, 2006). In the crowdfunding framework, funds for an entrepreneur’s new venture or initiative are raised from the crowd, a collective group of backers, in the form of small donations or in exchange for something through a moderated Internet platform (Mollick, 2014). It enables entrepreneurs with any type of business or product, such as for- or not-for-profit, artistic or cultural, to realize funding by pitching it to the online crowd.

There are two types of users on a crowdfunding platform, the project creator and the backer, however, an individual may play both roles in respect to different projects. The project creator introduces their product on the platform with the intention of producing it once their funding goal is reached, at the same time, they can also be a backer contributing funds to another project.

These Web 2.0 financing platforms not only undertake all the investment logistics, they also provide social networking capabilities, allowing backers to actively participate in the process by sharing information and providing suggestions directly to the creator (Ordanini, Miceli, Pizzetti, & Parasuraman, 2011). By using crowdfunding as a means for

raising capital, consumer demand for the new venture and brand awareness can be gauged, demonstrated by the funds raised at the end of the campaign and the number of project backers (Mollick, 2014).

2.2 Crowdfunding types

At its core, the purpose of crowdfunding is about raising money in the form of small pledges from a large number of individuals online, however, there are many different ways to achieve this goal. Current literature has identified five different forms of crowdfunding an entrepreneur can choose from: donation-based, lending-based, equity-based, royalty-based and reward-based crowdfunding (Beck, 2012; Belleflamme and Lambert, 2016; Giudici, Nava, Rossi Lamastra & Verecondo, 2012; Leimeister, 2012; Mollick, 2014). I will describe the five different types of crowdfunding below.

Donation-based crowdfunding draws from the classical charitable giving model where backers expect no return from their donations. The projects associated with donation-based crowdfunding may or may not actually be non-profit. The main distinction of donation-based crowdfunding therefore comes from the crowd's motivation behind funding the project: philanthropy. Crowdfunders in the donation model, like donors in a charitable giving model, gain utility from the internal satisfaction in the act of giving, and or supporting the campaign cause with others (Giudici et al., 2012). One of the most popular crowdfunding site that implements a pure donation-based platform is *www.gofundme.com*, where the projects can range from funding an individual's cancer treatment to non-profit's environmental conservation efforts or even small business ventures (GoFundMe, 2019).

In the lending-based form of crowdfunding, backers provide funds to the project through small loans and receive interest payments in return. This form of crowdfunding is essentially the crowdsourcing evolution of the peer-to-peer lending model in microfinance. Entrepreneurs who select a lending-based platform are typically start-ups or small businesses seeking to find an alternative financing method with more favorable rates than loans from traditional avenues such as a commercial bank (Miller, 2019). Different from a donation model of crowdfunding, in the lending model backers gain utility from receiving interest payments from the project (Belleflamme, Omrani, & Peitz, 2015).

In equity-based crowdfunding, securities are offered to backers in exchange for a backer's funds. The securities can be in the form of company shares, debt or a convertible note from the private company that is being crowdfunded for. Whereas in royalty-based crowdfunding, shares of future profits are given in return for providing capital. In both equity- and royalty-based crowdfunding models, entrepreneurs are seeking lower-cost investments for their start-up companies or small businesses by incentivizing potential backers with private equity or profit-sharing, respectively. Whereas backers are assessing the associated risks against the expected campaign outcomes in order to receive a positive return on their investments (Belleflamme et al., 2015).

Lastly, in reward-based crowdfunding, backers receive material and or immaterial compensation in return for donating a specific amount to the project. Crowdfunders in this type of crowdfunding are driven by not just their motivation in supporting a cause or project, but by personal benefits in the form of rewards (Belleflamme, Lambert &

Schwienbacher, 2013). Under the reward-based model, campaign success is realized by offering rewards to backers in exchange for a guaranteed minimum pledge. Literature has identified two types of rewards offered in a reward-based model: materialistic and symbolic. The material rewards are typically the product itself, early access or additional project related merchandise (Vukovic, Mariana & Laredo, 2009). This type of reward has been found to modify short-term behaviour effectively (Roehm, Pullins, & Roehm, 2002). Symbolic rewards are usually in the form of social acknowledgements, creative experiences or meet-and-greets with the project creators themselves (Belleflamme et al., 2013; Kazai, 2011; Lacey & Sneath, 2006; Shi, 2018).

Reward-based crowdfunding remains the most prevalent of the five types, with Kickstarter and Indiegogo being the most recognized and researched crowdfunding platforms (Kraus, Richter, Brem, Cheng, & Chang, 2016). To date, Kickstarter successfully funded 166,965 projects and raised \$4.4 billion USD (Kickstarter, 2019). Furthermore, this paper will be using data collected from Kickstarter to study crowdfunding efforts as they relate to and build upon previous research conducted on this platform. To have a clearer understanding on how Kickstarter operates their platform, I will explain the steps in a crowdfunding project's life cycle from pre-launch to post campaign.

2.3 How Kickstarter works

For a project creator to launch their campaign on the crowdfunding platform, www.kickstarter.com, they must abide by a set of rules concerning intellectual property rights, legal issues, commitment to truthfulness, and committing to a funding goal and

launch duration. All new projects go through a review process where Kickstarter verifies if the campaign complies with their rules before it is launched to the public. Guidelines for a successful campaign are provided by Kickstarter, by recommending the inclusion of thorough descriptive details on their project, images and/or videos, a menu of reward offerings, frequently asked questions and posting progress updates.

In reward-based crowdfunding, the menu of reward offerings is a tiered scheme of benefits offered to backers based on the amount of funding contributed, where additional benefits are included at each higher tier. As mentioned previously, these rewards can be material or symbolic. An example of a symbolic reward would be simple a “thank you” e-mail to honorary mentions of the backer in the campaign to in-person meetings with the creators. Materialistic rewards can range from the product itself to complimentary merchandise or a personalized version of the product. Although Kickstarter does not require project creators to offer a reward scheme, the site recommends it and reminds creators to budget carefully so they are able to fulfill their reward promises.

Once the campaign is launched, it will only be “active” for a pre-determined duration set by the project creator for backers to support. Once the campaign ends, it is considered “completed” meaning it is no longer available for donations of any sort. While the project is live, Kickstarter allows backers to comment their thoughts and feedback on the project page. Backers contribute to campaigns by either altruistically donating, and expecting nothing in return, or they can select a reward tier. There is also a limit of \$10,000 a backer can contribute to a project. By selecting a reward tier, the backer contributes, at minimum, the amount associated to that tier in exchange for the promised rewards listed there if the campaign reaches its funding goal. Although a backer can only

opt-in to one reward tier, they can still donate more than the pledge amount specified for that tier. For example, a film project with a campaign goal of \$1,500 featuring a reward scheme consisting of 6 tier offerings is described in Table 1:

Table 1: Example of a Reward Scheme

Tier	Pledge amount	Rewards
1	\$1 or more	A thank-you e-mail from the project creator.
2	\$10 or more	The previous tier reward and a pre-release digital access to the film.
3	\$10 or more	A thank you e-mail from the project creator and a signed poster of the cast.
4	\$25 or more	All previous tier rewards and a physical DVD copy of the film signed by the cast and director.
5	\$50 or more	All previous tier rewards plus exclusive access to behind the scene footage and a T-shirt of a film scene of your choice.
6	\$2,000 or more	All previous tier rewards and you will be flown in for an in-person interview with the director and cast members of your choice. (You must have a valid passport and/or Visa. We will pay for your flight and lodging)

At a given tier, the dollar value associated is the minimum amount a backer must pledge to receive the corresponding reward. For example, at tier #3, the associated tier value or reward value is \$10. It is important to note that Kickstarter allows duplicates of

the tier value only if the reward offerings are different. To illustrate this, tier #2 asks for the same pledge amount of \$10 as tier #3, however the reward offerings are different: both offer a thank-you email from the creator, however, tier #2 offers a pre-release digital access while tier #3 offers a signed poster.

If a backer selects the third tier, they will not be able to select another tier and must pledge at least \$10. In exchange, they will receive a thank-you e-mail and a signed poster of the cast if and only if the project reaches its funding goal. To differentiate between backers who opt-in to a reward tier and those who do not, they will be referred to as “tier backers” and “regular backers”, respectively.

As Kickstarter has an all-or-nothing policy, the platform does not charge a backer’s credit card unless the funding goal is met or exceeded by the end of the campaign, meaning project creators do not receive any funding during the campaign. If the funding goal is not met, the project creators face no fees since the backers were not charged. Interestingly, Kickstarter also allows creators to include a tier value that exceeds the campaign goal. Tier number 6 has a tier value of \$2,000 while the campaign itself is only asking for \$1,500! If any backer selects tier number 6, the campaign would immediately reach its funding goal, however, backers can continue to pledge up until the campaign end date.

3. Literature Review

As crowdfunding is a recent phenomenon, academic literature on the determinants of a project’s success is limited, particularly in the reward-based framework. Although there is

a consensus regarding most factors that increase the success of crowdfunding campaigns, such as the social network size and presence of the project creator and the inclusion of visuals in the project description, studies on reward schemes offer conflicting results. The literature review for this emerging area of research will be focused on reward-based crowdfunding. This section will first look at a few theoretical crowdfunding frameworks then explore the empirical studies on factors that impact a campaign's success and failure.

Nocke, Peitz, and Rosar (2011) proposed a theory that frames crowdfunding projects in a pre-ordering model where the rewards are the product itself, allowing for the 'advance-purchasing' as a vehicle for price discrimination due to information asymmetries. Thus, high-expected valuation consumers will tend to buy early and those with lower-expected valuation will wait and buy only if the realized valuation is high once the campaign is completed. Belleflamme, Lambert and Schwienbacher (2014) extended Nocke et al.'s theory to propose a model of reward and equity-based crowdfunding framed in the context of pre-ordering in a 2 period game. Their model finds that an entrepreneur would prefer reward-based crowdfunding if the market size is relatively larger than their capital goal, otherwise they would prefer the equity-based crowdfunding.

Much of the descriptive and empirical literature to date has mainly focused on understanding the underlying dynamics that influence a project's success or failure. I will divide these studies by two groups of factors influencing a project's success; creator characteristics and campaign characteristics.

The first group examines the characteristics of the project creator in relation to the success of their campaign. Studies have analyzed the size of a creator's social network and their engagement with early campaign backers and found a positive relationship in funding outcomes where the number of online friends and social networks functioned as social capital (Agrawal, Catalini, & Goldfarb, 2011; Colombo, Franzoni, & Rossi-Lamastra, 2015; Lehner, 2014; Mollick, 2014; Zheng, Li, Wu, & Xu, 2014). Creators who sustained social buzz by spreading campaign awareness by sharing features to Facebook, Twitter and Instagram saw greater campaign success and demand for their project (Burtch, Ghose, & Wattal, 2013; Thies, Wessel, & Benlian, 2014).

Mollick (2014), using Kickstarter data, found evidence to support the home bias effect, where the geographical proximity of a creator to their initial supporters was correlated with campaign success. Additionally, Agrawal et al. (2011) found similar results using Sellaband, a crowdfunding platform for music artists. They reasoned that campaigns can gain significant momentum from early family, friend and local followers. Studies have also found evidence that crowdfunding can overcome geographical boundaries because a backer's decision is based on perceived quality of the project rather than geographical proximity (Agrawal et al., 2011; Cordova, Dolci & Gianfrate, 2015). These findings suggest crowdfunding allows creators in non-central locations to access the same level of funding opportunities as metropolis located creators, leading to more distributed and non-geographic restricted funding (Hu, Li, & Shi, 2015).

The second group studies the features of the campaign itself as determinants of crowdfunding success. These features include everything presented on the project's

webpage such as the information provided, visual presentation and creator updates. Projects hosted on all-or-nothing platforms such as Kickstarter are found to have more successful campaigns than keep-it-all platforms such as GoFundMe, where creators receive all the funds even if the goal is not met (Wash & Solomon, 2014). All-or-nothing campaigns also tend to provide more detailed information on their projects, suggesting this is done in order to decrease the risk of not achieving the funding goal (Cumming, Leboeuf, & Schwienbacher, 2014). Furthermore, Marom and Shade (2013) used text mining technology and found creators who provided more detailed information have more support which increases the success of their campaigns, particularly for artistic and creative campaigns.

There is extensive evidence that projects with high funding goals have a lower probability of being funded or overfunded (Belleflamme et al., 2013; Cordova & Gianfrate, 2013; Frydrych et al., 2014; Mollick, 2014). Interestingly, longer campaign durations also have a negative effect on a project's success (Hahn & Lee, 2013). Kuppuswamy and Bayus (2013) and Rao, Xu, Yang and Fu (2014) examined the funding dynamics during the campaign and found that they were not linear but u-shaped where most pledges were received in the beginning and at the end of the campaign. While Frydrych et al. (2014) suggests campaigns with a shorter duration is a signal for legitimacy as it is perceived to be a more achievable expectation. Other campaign characteristics that positively correlated with success include being featured on the platform's main page, having visual information such as videos, pictures and infographics, detailed project descriptions and frequent project updates during the

campaign . (Kuppuswamy & Bayus, 2013; Marom & Shade, 2013; Zheng, Li, Wu, & Xu, 2014)

By analyzing Kickstarter data, both Leite and Moutinho (2012) and Mollick (2014) suggest creators use simple reward structures, citing a negative relationship between the number of rewards and success. It is plausible that choice overload is present with an increased number of tier offerings, decreasing their motivation to choose, make a decision or committing to their choice (Scheibehenne, Greifeneder, & Todd, 2010). Interestingly, Carr (2013) found the opposite. In Carr's study, the dataset included all projects launched on Kickstarter since its inception in April 2009 to January 2013. Whereas Leite and Moutinho discovered Kickstarter did not reach maturity until after February 2011, therefore projects launched before March 1, 2011 were excluded in their study.

Shi (2018) examined consumer responsiveness to different reward structures by differentiating between material and symbolic types, the number of backers, price sensitivity and revenue gained from each tier. She found reward type is important because, on average, backers preferred rewards that offer instant gratification over symbolic rewards, this result was predominantly significant in the lower end of the reward scheme. Colombo et al. (2015) found a positive relationship between project success and symbolic rewards. A very recent study examined the influence different reward schemes had on a backer's decision. Surprisingly, the authors concluded the distribution of backers' is an inverted u-shape with the majority of backers pledged to the lower-mid tiers, regardless of the number of reward tiers (Du, Li, & Wang, 2019).

There are a few qualitative and questionnaire studies that interview backers on the incentives which motivate them to participate in crowdfunding a project. The most common motivations were self-expression, enjoying social interactions on the platform, strengthening their commitment to a common interest, a sense of belonging and community, and personal utility (Gerber, Hui, & Kuo, 2012; Harms, 2007).

4. Data

4.1 Data Collection

The crowdfunding data analyzed in this paper were web scraped from Kickstarter using Python, the crawler package, Scrapy, and basic knowledge of the html and regular expression languages. Due to the platform removing older or unsuccessful projects from the search function, I used *www.Kicktraq.com* to search for the campaign links. Kicktraq is a third-party website dedicated to archiving links of all projects launched on Kickstarter since its inception. On June 8th, 2019, I scraped the links of all 31,042 projects listed under the Film and Videos category on Kicktraq. The oldest campaign was launched on April 28, 2009, which was also the very date Kickstarter went live. This list of campaign html addresses was then fed through a Scrapy spider I wrote where it sent out crawlers to *www.Kickstarter.com* to download the page's html source and parse through it.

Data cleaning and restructuring was done using Pandas, a data manipulation and analysis Python library package. In the raw dataset, many projects were unusable as they were either cancelled by the creator or Kickstarter before the campaign end date, were still active, or were suspended for violating copyright laws. In addition, on June 3rd, 2014,

Kickstarter simplified their rules, changed their web layout and introduced a new project launching process, therefore, only projects after this date were considered. There were some other projects I removed from my dataset due to limitations in text mining technology as their entire campaign description consisted of a single infographic.

The projects under the Film and Video category can range from small 5-10 minute student videos that require little funding to web shorts or costly full length movies, therefore, I also eliminated projects with funding goals I considered either unrealistically high or low. I excluded 53 funding goals which were above one million US dollars, some as high as \$50 and \$99 million. I removed projects below the 1st percentile because it is reasonable to assume even a short video project, such as a YouTube video, would need more than \$100 in funding to be a realistic product. The percentiles are presented in Table 2.

The final dataset includes 7,968 projects with 49.61% being successfully funded projects and 50.39% being unsuccessful. Compared to Kickstarter's officially reported statistics on all projects launched since 2009, my dataset's percentage of successful (unsuccessful) projects are relatively higher (lower) than Kickstarter's 36.70% (62.30%). These values, however, included older projects and international projects outside the US and Canada, therefore, it could account for these differences. Overall, there is a higher incidence of unsuccessful projects than successful ones in both statistics.

For the robustness check of my analysis, I will also consider a smaller subset of my dataset where the funding goals are within the 10th and 90th percentile, where the projects are between \$800 and \$50,000. This dataset would be reflective of small to

medium sized film projects, where the average cost of making a short film is estimated to be between \$500 and \$1,000, per minute of the film (Adams, 2017). Interestingly, the percent of successfully funded projects within this subset is higher (50.96%) with a lower instance of unsuccessful projects (49.04%).

Table 2: Funding goal percentile statistics.

Percentile	Funding Goal	Percentile Range	Mean	Std. Dev.	Frequency
1%	\$100	[1%-5%)	\$265.75	\$103.73	333
5%	\$500	[5%-10%)	\$565.24	\$87.94	411
10%	\$800	[10%-25%)	\$1451.98	\$425.84	1204
25%	\$2,180	[25%-50%)	\$3903.36	\$1033.01	1909
50%	\$6,000	[50%-75%)	\$10685.32	\$3432.25	2090
75%	\$20,000	[75%-90)	\$28562.08	\$7555.41	1167
90%	\$50,000	[90%-95%)	\$59259.48	\$10581.01	451
95%	\$83,000	[95%-99%)	\$139356.35	\$52834.4	313
99%	\$300,000	[99%-100%]	\$500388.89	\$183997.11	90
		Total	\$22661.19	\$62735.22	7968

4.2 Variables

To account for a variety of factors influencing a tier backer’s decision, the following key variables of interest and control variables were considered. Summary statistics of these data are in Table 3 and descriptions of the variables are listed below.

Table 3: Summary statistics

Variables	Full dataset				Data subset: 10 th – 90 th percentile			
	Mean	St.Dev	Min	Max	Mean	St.Dev	Min	Max
Number of Tier Backers	64.24	192.33	0	7960	57.17	117.15	0	2424
Number of Tiers	8.89	6.75	1	78	8.94	6.34	1	78
Mean Tier Value	527.82	716.08	1	10000	500.01	634.54	1	10000
Funding Raised	8232.70	22789.03	0	859426	6953.93	12036.85	0	170000
Funding Goal	22661.19	62735.21	100	995000	11418.31	12139.22	800	50000
Campaign Length	32.18	11.65	1	60	32.13	11.20	1	60
Comments	4.02	25.63	0	1167	3.05	13.68	0	335
Updates	5.37	8.77	0	125	5.55	8.64	0	125
Project Videos	0.90	0.69	0	14	0.91	0.64	0	14
FAQs	0.23	1.07	0	20	0.21	0.99	0	19
Project Images	5.98	7.99	0	71	6.18	7.86	0	71
Full Campaign Description Length	3031.95	2780.33	1	32372	3121.45	2727.96	1	32372
Project Description Length	113.72	25.55	6	138	113.55	25.65	6	138
Featured by Kickstarter	0.11	0.32	0	1	0.12	0.33	0	1
Projects Launched	0.12	0.33	0	1	0.11	0.32	0	1
Success	0.50	0.50	0	1	0.51	0.50	0	1
States/Provinces	-	-	-	65	-	-	-	65
Categories	-	-	-	20	-	-	-	20
Observations	7968				6574			

Number of Tier Backers: The number of total backers supporting the project by selecting into a reward tier.

Number of Tiers: The number of reward tiers in a campaign. The Kickstarter platform encourages creators to have reward tiers but advises creators to keep in mind the costs of incorporating additional tiers by including it into their funding goal. As seen in Table 3, the range of reward schemes range from just one to 78 with an average number of 9 tiers

Mean Tier Value: The average value of the reward scheme offerings. Since this paper is using the post campaign aggregated data, a significant portion of information on each tier reward value and backer is lost. In the full dataset, the individual tier values range from \$1 to \$35,000 (mean 668.19; sd 1,711.69), with the average lowest and highest values being \$32.41 and \$2,762.90, respectively. From all 7,968 projects in my dataset, there was a total 72,186 number of tiers. The tier value in crowdfunding can be thought of as an equivalent to the price backers pay in advance for the rewards, if the campaign meets its funding goal. Therefore, by incorporating the mean tier value of each project, a measure of price sensitivity to the reward scheme can be captured.

Funding Raised: The total amount raised at the end of the campaign from both tier backers and regular backers, this may be below or above the funding goal.

Funding Goal: The campaign goal amount that must be met for it to be considered successful.

Campaign Length: The duration the campaign was online for, measured in days.

Comments: The number of comments posted on the project page by its backers. Note these comments may be positive, expressing enthusiasm or suggestions to the creator, or they can be negative.

Updates: The number of updates posted by the creator. Kickstarter encourages creators to post progress updates on their projects to keep backers engaged and attract new potential backers.

Project Videos: The number of videos on the campaign page. The platform recommends creators to include at least one video.

FAQs: The number of Frequently asked questions a creator includes in their FAQs tab that anticipate and may address potential backers' concerns.

Project Images: The number of images on the page, these may be purely pictures, photographs or infographics.

Full Campaign Description Length: The total number of words scraped from the campaign's main page describing the project in detail. As mentioned in previous literature, providing more detailed descriptions may positively influence the project's success. I have noticed while data cleaning, for the projects with very low description lengths, they compensate by having a higher number of videos and images.

Project Description Length: The short summary description of the project backers first sees when they browse Kickstarter's search engine.

Featured by Kickstarter: Kickstarter staff regularly browse through the projects launched on its platform, if the staff likes a project, it is featured on their main page and at the top of search queries tagged by 'Projects we love'. This is a dummy variable with a value of 1 if it was featured and 0 otherwise.

Projects Launched: Some creators have launched more than one project on Kickstarter. If the creator has more than one project, it takes on a value of 1 and 0 otherwise.

Success: Dummy variable of whether the campaign was a success (1) or unsuccessful (0) based on whether the funding goal was met.

State/Province: All Kickstarter projects include a regional tag indicating the geographical location of the creators. To control for home bias effects, the project's state or province tag is used to account for any unique or unobserved interest predominant in a certain region.

Categories: The subgenre tags listed by Kickstarter under the main category of 'Film and Videos'. Campaigns can choose to include the subgenre of their film but only one subgenre tag can be used. The top three largest subcategories from the full dataset are Documentaries (1353), Shorts (1,194), and Film and Videos (1,117). The subgenre that has the smallest standard deviation in their funding goals is Shorts (mean 7,152.826; sd 9,691.951). Compared to the second smallest, Experimental Films, there is a large increase in the standard deviation and mean of 3.5 and 1.5 times higher, respectively. This suggests funding levels of different film categories are very diverse.

4.3 Descriptive Statistics

Examining the correlation matrix presented in Table 4, I find the same descriptive patterns between success and other key variables discussed in previous literature. All the negatively correlated values are in bold. Higher funding goals and longer campaigns are the most negatively correlated with the success of a project, -0.160 and -0.194, respectively. Interestingly, the project description length is negatively correlated with success (-0.029). While previous literature has focused on the influence of the full

campaign description's length on success and found it to be positive, project description length, however, has not been included in their analysis. Of all the variables, only campaign length is negatively correlated with the number of tier backers, reflecting the findings of Frydrych et al. (2014) and Hahn and Lee (2013).

When looking closer at the tier values offered across all the projects collected, the most frequently occurring tier value is unsurprisingly \$100, with \$50, \$25 and \$500 following closely behind in both the full dataset and the subset. While the reward value with the highest number of tier backers was \$25 which counts for 18.35% of all tier backers (total number of tier backers is 518,307). With that in mind however, the average pledge per tier backer is significantly higher at \$89.28, suggesting there is a sufficient number of backers who pledge towards higher reward tiers. Recall the average number of tier backers per campaign was 64 and the mean number of tiers was 9, with the mean number of tier backers per reward tier being 5.46 (sd 11.78), it appears some campaigns receive much more tier backers than others. The histogram of the logarithm of all 72,186 tier values is presented in Figure 1 and the top 10 tier values offered sorted by highest to lowest frequency is in Table 5 with their respective number of tier backers. Given that there are only 7,968 projects and all campaigns included at least one reward tier, this shows that most creators designing their reward scheme do share common tier values and it is not completely arbitrary with \$25 being the most popular choice among backers.

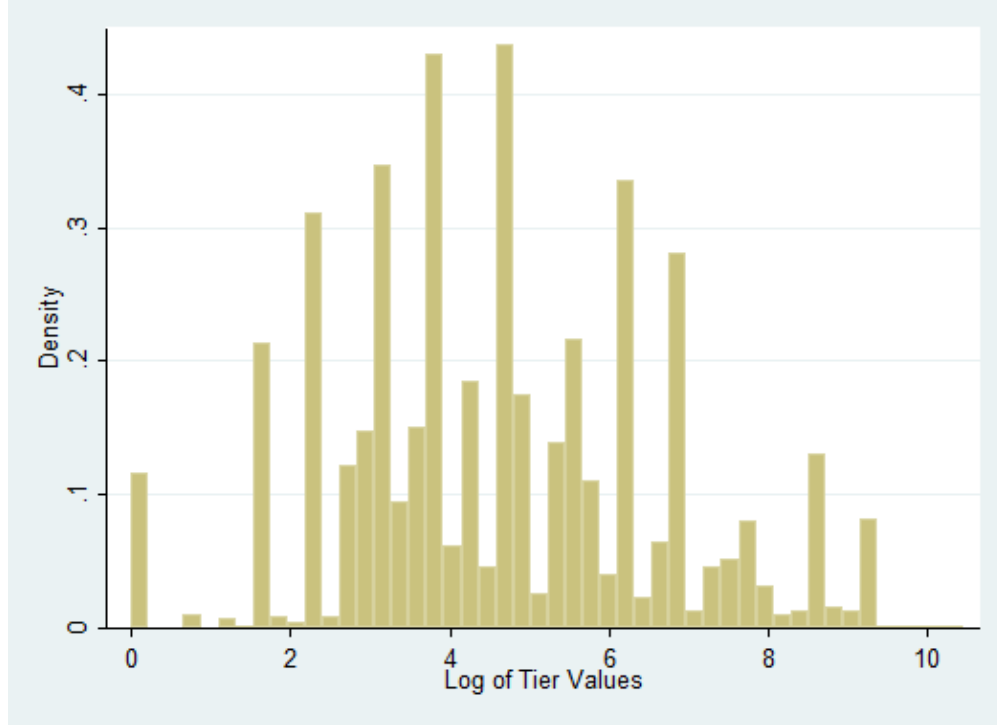
Table 4: Matrix of Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Number of Tier Backers	1.000															
(2) Number of Tiers	0.441	1.000														
(3) Mean Tier Value	0.155	0.252	1.000													
(4) Funding Raised	0.871	0.463	0.226	1.000												
(5) Funding Goal	0.178	0.168	0.330	0.243	1.000											
(6) Campaign Length	-0.014	-0.002	0.106	0.001	0.137	1.000										
(7) Comments	0.780	0.292	0.079	0.753	0.179	0.001	1.000									
(8) Updates	0.477	0.469	0.124	0.467	0.030	-0.031	0.348	1.000								
(9) Project Video	0.148	0.262	0.119	0.169	0.039	-0.013	0.085	0.221	1.000							
(10) FAQs	0.362	0.183	0.066	0.327	0.082	0.002	0.343	0.258	0.054	1.000						
(11) Project Images	0.316	0.515	0.162	0.346	0.066	-0.014	0.210	0.388	0.324	0.144	1.000					
(12) Full Campaign Description Length	0.266	0.430	0.196	0.304	0.108	-0.021	0.134	0.340	0.225	0.130	0.560	1.000				
(13) Project Description Length	0.031	0.034	0.045	0.048	0.031	0.013	0.028	0.038	0.030	0.012	0.022	0.066	1.000			
(14) Featured by Kickstarter	0.407	0.343	0.122	0.400	0.029	-0.038	0.239	0.412	0.154	0.105	0.288	0.273	0.034	1.000		
(15) Projects Launched	0.035	0.031	-0.000	0.018	-0.010	-0.002	0.033	0.056	0.006	0.024	0.010	-0.002	-0.021	0.007	1.000	
(16) Success	0.271	0.255	-0.059	0.289	-0.160	-0.194	0.136	0.451	0.204	0.072	0.301	0.251	-0.029	0.360	0.026	1.000

Table 5: Tier value frequencies, sorted from highest to lowest

Tier Value	Frequency	Percent	Total Number of Tier Backers
\$ 100	6500	9	57,333
\$ 50	6249	8.66	70,405
\$ 25	5359	7.42	95,114
\$ 500	5001	6.93	7,313
\$ 10	4856	6.73	44,028
\$ 1,000	4287	5.94	4,251
\$ 5	3351	4.64	20,922
\$ 250	3241	4.49	9,619
\$ 75	2319	3.21	14,477
\$ 20	2216	3.07	30,877

Figure 1: Histogram of the logarithm of the tier values

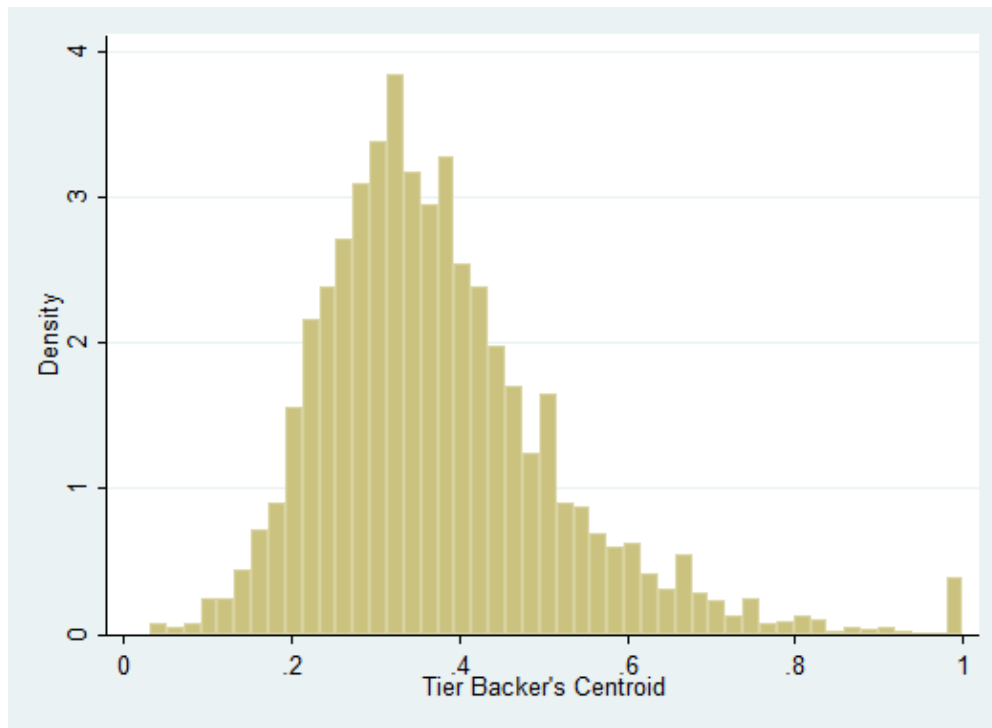


Since each reward scheme is unique, it is hard to compare a tier backer’s decision across different projects. Therefore, following Du et al. (2019), I created the tier backers’ centroid to appropriately compare a backers’ tier choice, relative to all the other options within the reward scheme. This variable, is created as follows:

$$\text{TierBackerCentroid}_i = \frac{\sum_{j=1}^N j \times \text{TBackerNumPerTier}_{ij}}{\text{TierBackerNum}_i \times N} \quad (1)$$

where $\text{TierBackerCentroid}_i$ is the backers’ centroid for project i . For a given project i , there are $j = 1, \dots, N$ number of tiers and $\text{TBackerNumPerTier}_{ij}$ is therefore the number of backers in tier j of project i . TierBackerNum_i is the total number of tier backers for a given project i , this is the same *Number of Tier Backers* variable mentioned above.

Figure 2: Histogram of backers' centroid



The histogram, presented in Figure 2, aligns with Du et al.'s findings where the majority of tier backers tend to select reward tiers located around the lower-middle of the scheme menu.

This would represent, on average, if a campaign offers 9 tiers in its scheme, with 9 being the highest valued tier and 1 being the lowest, regardless of the dollar amount of the tiers, the majority of backers would tend to select the 4th and 3rd reward tier. Du et al.'s results would imply changing the number of tiers offered in a reward scheme would not result in any significant changes to the backers' centroid shape depicted in Figure 2. Their study, however, did not take into consideration the monetary value of associated with each additional tier; would the results still hold true if increasing the tiers offered resulted

in the average tier value increasing or decreasing. I would expect increasing the average tier value would negatively influence backers from selecting a reward tier.

5. Model and Results

5.1 The Model

To examine whether increasing the number of tiers offered in a reward scheme would increase backers selecting a reward tier, thereby increasing the campaign's funds raised and success, I first ran an ordinary least squares (OLS) regression with all the categories. The regression model with the number of tier backers, $TierBackerNum_i$, in campaign i as the dependent variable is as follows:

$$TierBackerNum_i = \beta_0 + \beta_1 TierNum_i + \beta_2 AvgTierValue_i + \gamma \varphi_i + \delta \alpha_i + \varepsilon_i \quad (2)$$

where for each campaign i , $TierNum_i$ is the number of tiers, $AvgTierValue_i$ is the average tier value of the reward scheme. To control for specific project related factors, the campaign characteristic set of variables φ_i is a vector that includes the following: the funding raised, funding goal, campaign length, number of comments, updates, project videos, the list of frequently asked questions (FAQs) that provide answers to basic information on the project that backers can read, project images, the full campaign description length, project description length, and a dummy for if it was featured by Kickstarter. To control for project creator specific characteristics the vector α_i includes the following variables: a dummy variable for if the creator has launched more than one campaign on Kickstarter, the state or province the project was launched from, and the sub-categories under Film and Videos.

Since this is not a controlled experiment, endogeneity issues are present in the form of self-selection and partial simultaneity bias. How to and whether to fund a project on a crowdfunding platform instead of traditional methods is entirely up to the entrepreneurs' choice. Therefore, a positive relationship between tier backers and the number of tiers may be due to an upward self-selection bias from unobserved project quality: offering more tiers may be a signal of poor project quality. Had the project been of high quality, it is likely that the entrepreneur would be able to successfully secure funding from traditional methods without offering any rewards to influence investment behaviour, therefore they would be less likely to use crowdfunding.

The process of searching for projects to pledge to may not be completely randomized for some backers as there are search options for sorting campaigns by the time remaining, funding raised and whether it was featured, etc. Backers may be selectively choosing certain campaigns to back, resulting in an upward bias in the dependent variable. As the campaign deadline approaches, creators may choose to post more frequent updates or backers may add more comments urging potential backers to pledge. Alternatively, potential backers may see that funding is close to completion and decide to contribute to the project, giving it a "final push" over the funding goal. It is hard to differentiate the influence of whether these factors cause more backers to contribute or if more backers increase campaign updates and comments.

Unfortunately, there does not exist an instrumental variable I could web scrape for as all campaign variables are based on a creator's choices, thereby affecting anything crawlable on the webpage. Therefore, I will attempt to control for these endogenous

issues as much as I can by exploiting the categories that are similar in funding goals and film-type, but with enough variability and randomness in the tier schemes.

5.2 Results and Analysis

Table 6 reports the estimation results and robust standard errors of the influence the different factors have on the number of tier backers. Column (1) reports the estimation results using all the observations. Column (2) restricts all projects to documentaries as it is the largest sub-category with 1353 observations. Columns (3) to (5) restricts the observations to 3 sub-categories with the smallest standard deviation in funding goal; shorts, experimental and narratives. The last column (6) reports the estimation results conditional on the projects being successful.

In general, across all the columns except (4) and (5), increasing the number of tiers offered in a reward scheme is significantly associated with an increase in the number of tier backers in the Film and Videos category. With the addition of an extra reward tier, on average, holding all else constant, the number of tier backers will increase by 1.068 to 2.332. Although these coefficients may be small, recall the average number of backers per tier is only 5.46. Assuming the number of tier backers is an indicator for a higher probability of success, my results are contrary to Leite and Moutinho's (2012) findings, where they instead found increasing the number of tier offers was negatively associated with the project success. A plausible explanation for this discrepancy would be the year of Kickstarter data used. Leite and Moutinho used data from 2011 to 2012, before Kickstarter changed their platform layout and regulations. The newer layout and rules could have facilitated a more structured tier creation and selection

Table 6: Regression Results

	(1) All Categories	(2) Documen- tary	(3) Shorts	(4) Experi- mental	(5) Narratives	(6) Success Only
TierNum	1.347*** (0.430)	2.094** (0.835)	1.068*** (0.280)	0.683 (0.704)	0.806 (0.644)	2.332*** (0.722)
AvgTierValue	-0.005*** (0.002)	-0.012** (0.005)	-0.003 (0.004)	-0.007** (0.003)	-0.005 (0.009)	-0.016* (0.009)
Funding Raised	0.005*** (0.000)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.011*** (0.002)
Funding Goal	-0.000*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000* (0.000)	-0.000 (0.000)	-0.007*** (0.002)
Campaign Length	-0.098 (0.061)	-0.024 (0.221)	-0.020 (0.052)	-0.067 (0.079)	-0.022 (0.234)	-0.052 (0.152)
Comments	2.133*** (0.742)	1.771 (1.143)	3.247*** (0.328)	4.859*** (1.732)	7.167*** (1.821)	1.678** (0.656)
Updates	1.052** (0.456)	1.116 (0.967)	0.615** (0.269)	1.432* (0.762)	0.101 (0.564)	0.922** (0.369)
Project Videos	-1.487 (1.359)	-3.992 (2.867)	-1.194 (1.695)	4.031 (3.746)	10.153** (4.402)	3.029 (5.412)
FAQs	8.801* (5.049)	15.510** (7.583)	-0.542 (2.347)	5.887* (3.141)	-7.159* (3.767)	5.912 (4.506)
Project Images	-0.284 (0.293)	-0.285 (0.689)	-0.132 (0.188)	-0.161 (0.678)	-0.821 (0.567)	-0.405 (0.414)
Full Campaign Description Length	0.000 (0.001)	0.002 (0.001)	0.001** (0.001)	0.001 (0.001)	0.003** (0.002)	0.001 (0.001)
Project Description Length	-0.072** (0.033)	-0.377** (0.172)	-0.006 (0.028)	-0.148** (0.071)	-0.024 (0.077)	-0.111* (0.062)
Featured by Kickstarter	43.337*** (8.685)	74.568*** (19.716)	13.652** (5.305)	13.475 (10.719)	30.994** (15.583)	40.731** (6.757)
Projects Launched	6.442* (3.701)	28.223* (16.172)	7.201** (2.872)	-7.552 (5.356)	-9.739 (7.128)	6.370 (6.511)
Controls:						
Success	Y	Y	Y	Y	Y	Y
State/Province Dummy	Y	Y	Y	Y	Y	Y
Category Dummy	Y					Y
Constant	8.035 (9.005)	53.683* (28.994)	0.105 (6.851)	13.417* (7.099)	22.872 (30.714)	-11.388 (20.800)
Observations	7968	1353	1194	163	503	3953
R-squared	0.811	0.827	0.835	0.867	0.815	0.835

Robust standard errors are in parenthesis

Note: *** p<0.01, ** p<0.05, * p<0.1

process, making it more appealing for backers to select into tiers instead of purely donating.

To test this hypothesis, I replicated Leite and Moutinho’s regression by using the dataset and variables I had web scraped. Their dependent variable was the percentage of funds raised and their independent variables included the number of total backers, tiers per campaign, comments, updates, category controls for Design, Games, Film & Video, Technology and Art, and the number of projects the creator backed. My dataset however, only included projects under the Film & Videos category launched in the US and Canada and did not include the number of projects a creator has backed. The regression results are found in Table 7 where column (1) restricted the dataset to projects launched between March 2011 to February 2012, the same dates Leite and Moutinho’s study used, column (2) uses the same sample as my regression analysis and column (3) restricts the dataset to funding goals of \$800 to \$50,000.

Table 7: Regression Results from Replicating Leite and Moutinho’s (2012) Model

	(1) Years: 2011- 2012	(2) Years: 2014- 2019	(3) Years: 2014-2019, 10 th -90 th percentile
Number of Total Backers	0.138*** (0.035)	0.047 (0.030)	0.046 (0.030)
Total Number of Tiers per Campaign	-0.577* (0.334)	0.186 (0.265)	0.515** (0.257)
Comments	0.027 (0.348)	-0.305 (0.267)	-0.287 (0.026)
Updates	1.818*** (0.294)	3.494*** (0.448)	3.276*** (0.445)
Category Dummies	Y	Y	Y
Constant	51.866*** (8.408)	31.761*** (6.058)	23.662*** (5.950)
Observations	2886	7968	7224
R-squared	0.211	0.071	0.1208

Robust standard errors are in parenthesis. Note: *** p<0.01, ** p<0.05, * p<0.1

As seen in Table 7, column (1), the sign on the number of tiers is negative, just as Leite and Moutinho found when restricting the project launch dates to 2011 to 2012. The coefficient value they found was -1.677, suggesting an additional tier would decrease project funding by 1.68% on average. While my result estimate is smaller, with a 0.58% fall in funding, it could be due to my observations being restricted to Film & Video projects only. From column (2) and (3), the sign does indeed become positive as I had expected, suggesting that after Kickstarter updated their process and platform layout, increasing the number of tiers became positively associated with campaign success.

Returning to the results on Table 6, as anticipated, under columns (1), (2) and (4) to (6), increasing the average tier value will significantly deter backers from selecting into a reward tier. Since the mean of a campaign scheme's value is around \$527.82 (sd \$716.08), a -0.005 to -0.016 coefficient would require the reward scheme's average value to increase by roughly \$100 to deter a tier backer from pledging. This result roughly aligns with Shi's (2018) findings where on average backers preferred materialistic rewards over symbolic rewards with symbolic rewards associated with higher tiers. When combined with the implications of the tier backer's centroid, where the majority of backers selected lower-mid tier values, most tier backers are indeed price sensitive and may not be interested in building a meaningful relationship with the project content or creator.

Conforming with well established research, although my coefficients are small, increasing the funding goal will see to a fall in the number of tier backers. It appears across almost all columns except for column (2), the number of comments backers leave,

all else constant, is associated with a significant and higher number of tier backers ranging from 1.678 to 7.167 more pledgers. This suggests that backer feedback is important and influential to a backer's decision in selecting into a reward tier.

Unfortunately, the data I scraped was not daily data, therefore the simultaneity issue of whether more feedback increases the number of tier backers or whether a higher number of tier backers causes more comments to be made cannot be discerned.

Interestingly, increasing the number of videos is only significant under the narratives category, where including a video may attract 10.153 more tier backers, while under columns (1) to (3), the sign is flipped but insignificant. The same is true for project image as the coefficient's negative sign is counter to the literature consensus, again however, the results are not significant.

The project description length negatively influences the number of backers and is significant under most of the columns. If a creator adds a few extra words, say 10, to their campaign's description, *ceteris paribus*, it may decrease the number of tier backers by 0.72 to 3.77. This is interesting as it suggests having a longer project description deters tier backers. Perhaps reading lengthy project introductions to decide which campaign to back is equivalent to information overload, causing potential backers to "tune out" instead of "in" to the project description. However, it cannot be concluded that this deters backers altogether from pledging as it does not conclude anything about regular backers. Having the project featured by Kickstarter significantly and greatly increases the number of tier backers across all columns, where if it was featured the project would see 13.652 to 74.568 more tier backers by the end of the campaign.

5.3 Robustness Check

Although short and amateur videos are relatively inexpensive to create and can be funded for \$100 or more, for a professionally filmed feature it would require a lot more money. Therefore, I will reconduct my regression analysis by restricting my dataset to funding goals of \$800 to \$50,000, as mentioned in Section 4. The regression results are displayed in Table 8. Assuming the creator already possess the necessary filming equipment, Adams (2017), a short filmmaker having created over 20 shorts, estimates the cost of hiring a cast as \$125 per actor. Including other expenses such as food, insurance, make-up and photography, the 10th to 90th funding percentile of \$800 to \$50,000 is a reasonable lower and upper bound for filming costs.

Although some coefficients are quite different, the signs are the same for all significant variables. The coefficient values for the number of pledge tiers are significant in the same columns as the full dataset, but it is lower across all significant columns, particularly in the successful projects only column (6). It would suggest the number of tiers has little influence on attracting more tier backers in this data subset. However, it is important to note that the average number of tiers in this dataset is higher, 8.88 to 9 and that the spread of tier schemes has fallen from 7.37 to 6.8. This could indicate that non-amateur film projects have the characteristic of offering more reward tiers.

The effects of increasing the average tier value of a scheme are very similar, with significant coefficients ranging from -0.006 to -0.023. Surprisingly, the effect of being featured by Kickstarter, in general, is lower than the full dataset: 43.34 to 23.5 under all

Table 8: Regression Results

	(1) All Categories	(2) Documen- tary	(3) Shorts	(4) Experi- mental	(5) Narratives	(6) Success Only
TierNum	0.520** (0.256)	2.079*** (0.605)	1.018*** (0.266)	0.699 (0.808)	0.322 (0.629)	0.920** (0.380)
AvgTierValue	-0.006*** (0.001)	-0.011*** (0.004)	0.001 (0.003)	-0.007* (0.004)	0.002 (0.008)	-0.023*** (0.005)
Funding Raised	0.007*** (0.001)	0.006*** (0.001)	0.004*** (0.000)	0.004*** (0.001)	0.004*** (0.001)	0.010*** (0.001)
Funding Goal	-0.001** (0.000)	-0.001* (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.001** (0.000)	-0.005*** (0.001)
Campaign Length	-0.083 (0.052)	-0.282* (0.150)	-0.016 (0.056)	-0.095 (0.125)	0.155 (0.244)	-0.125 (0.133)
Comments	2.541*** (0.319)	3.049*** (0.557)	3.046*** (0.213)	4.879*** (1.848)	7.401*** (1.891)	2.178*** (0.333)
Updates	0.497*** (0.176)	0.473 (0.375)	0.782*** (0.254)	1.480* (0.868)	0.154 (0.496)	0.655*** (0.187)
Project Videos	-1.384 (1.611)	-6.126* (3.246)	-0.021 (1.629)	4.780 (4.455)	6.132 (4.374)	-3.702 (2.689)
FAQs	5.301** (2.452)	5.351** (2.672)	0.138 (2.458)	6.566 (4.311)	-1.813 (3.023)	3.616 (2.293)
Project Images	-0.237 (0.179)	-0.574 (0.546)	-0.214 (0.183)	-0.216 (0.781)	-0.544 (0.558)	-0.360 (0.263)
Full Campaign Description Length	0.000 (0.000)	0.001 (0.001)	0.001* (0.000)	0.001 (0.001)	0.003* (0.002)	0.001 (0.001)
Project Description Length	-0.067** (0.029)	-0.226* (0.117)	-0.008 (0.029)	-0.155 (0.093)	-0.056 (0.078)	-0.117** (0.053)
Featured by Kickstarter	23.500*** (4.896)	29.631*** (8.758)	16.226*** (4.692)	12.692 (11.661)	41.655*** (14.156)	28.288*** (4.003)
Projects Launched	4.637* (2.424)	9.831 (10.464)	7.898** (3.324)	-9.214 (7.248)	-13.240* (7.886)	-0.241 (4.549)
Controls:						
Success	Y	Y	Y	Y	Y	Y
State/Province Dummy	Y	Y	Y	Y	Y	Y
Category Dummy	Y					Y
Constant	13.111 (9.376)	38.444** (18.231)	-1.942 (7.335)	14.043 (9.919)	27.050 (33.560)	7.292 (16.248)
Observations	6574	1107	1063	134	427	3350
R-squared	0.780	0.814	0.802	0.865	0.829	0.770

Robust standard errors are in parenthesis

Note: *** p<0.01, ** p<0.05, * p<0.1

categories and 74.57 to 29.63 under the documentary category. It's plausible that projects below \$800 or above \$50,000 benefit significantly more from being featured.

Overall, when controlling for the level of funding to be more representative of a professionally filmed picture, the effects of an additional tier is still significant but smaller. However, the average number of tiers in this data subset is also slightly higher and less dispersed than the full dataset. The influence of increasing a scheme's average tier value is consistent in both regressions, suggesting backers are more sensitive to price than the number of tiers.

5.4 Practical Implications

The practical implication my paper suggests for film and video project creators is to increase the number of lower tier offerings. While previous research is conflicted between the coefficient sign associated with increasing the reward scheme size, they did not control for the scheme's reward values. Once the *price* of the tier is factored in, increasing the number of reward tiers with lower values is associated with an increase in the number of tier backers.

However, if all creators increase the number of tiers in their reward schemes, would this crowd out the market and will the effects be nullified? According to www.statista.com, a third party website that collects web-traffic on the number of total and repeat backers on Kickstarter, the answer is no (Szmigiera, 2019). The number of repeat backers has increased steadily from 1.67 to 5.4 million over the past five years. Whereas the number of new project backers, backers who have never pledged on

Kickstarter before, has rapidly grown from 3.97 to 11.09 million. This indicates Kickstarter has yet to reach a stagnation in the number of new backers to the platform.

5.5 Limitations and Future Work

There are a few limitations to this paper as the dataset I used was scraped from the current largest and most popular reward-based crowdfunding platform, the findings may not be transferable to other smaller platforms. Also, only projects under the Film and Videos main category were included in my dataset, these findings may not be reflective of different categories that offer wider and varied products such as food items or electronics.

Due to the nature of the data collected being observational, there exists endogenous factors pertaining to creator choice in campaign design and backer's self selection, limiting the inference strength of the results. Due to this problem, the causal inference of my findings cannot be considered strong. In addition, the dataset used was cross-sectional data collected from after the campaigns ended. If the study was conducted again by collecting panel data instead, some endogeneity issues such as simultaneity and creator's time-invariant effects could be controlled for. Future studies could use more advanced text-mining and data scraping tools to examine the influence of the type of reward, the usage of certain keywords, and the number of hits a campaign page receives on the number of tier backers and project success. A controlled experiment can also be conducted to examine backers' response to the same project but presented described and worded differently.

6. Conclusion

My study offers an important implication regarding the design of reward schemes for projects in the creative Film and Videos category, generalized for crowdfunding platforms with growing new-user activity like Kickstarter. This implication reconciles the divergent findings other authors have on the impact of reward tier numbers on backer decisions. Increasing the range of reward scheme offerings will have a positive outcome on increasing the number of tier backers. However, this result will only hold if the average value of the entire reward scheme does not increase. That is to say, the inclusion of additional tier offerings with values on the lower-mid spectrum of the scheme will likely result in backers pledging to a project via a reward tier. It is unlikely this suggestion to creators will cause cannibalization on the platform, as the number of new platform users are increasing. This will also allow price-sensitive backers a wider option of pledge amounts, letting creators target their willingness to pay.

References

- Adams, L. E. (2017, August 31). *Save your money - the cost of making a short film*. Retrieved from Medium: <https://medium.com/@Lanceliot/save-your-money-the-cost-of-making-a-short-film-7630e6ca3429>
- Agrawal, A., Catalini, C., & Goldfarb, A. (2011). The Geography of Crowdfunding. *NBER Working Paper No. 16820*.
- Belleflamme, P., Lambert, T., & Schwienbacher, A. (2013). Individual crowdfunding practices. *Venture Capital, 15*(4), 313-333.
- Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing, 29*, 585-609.
- Belleflamme, P., Omrani, N., & Peitz, M. (2015). The economics of crowdfunding platform. *Information Economics and Policy, 33*, 11-28.
- Burch, G., Ghose, A., & Wattal, S. (2013). An empirical examination of the antecedents and consequences of contribution patterns in crowdfunded markets. *Information System Research, 24*(3), 499-519.
- Carr, S. (2013). Collective action and the financing of innovation: Evidence from crowdfunding. *SSRN Electronic Journal*.
- Colombo, M., Franzoni, C., & Rossi-Lamastra, C. (2015). Internal social capital and the attraction of early contributions in crowdfunding. *Entrepreneurship Theory and Practice, 39*(1), 75-100.
- Cordova, A. J., & Gianfrate, G. (2013). The bearable lightness of crowdfunding: Evidences from technology projects. In *4th European Conference on corporate R&D and innovation*. Sevilla.
- Cordova, A., Dolci, J., & Gianfrate, G. (2015). The determinants of crowdfunding success: evidence from technology projects. *Procedia - Social and Behavioral Sciences, 181*, 115-124.
- Cumming, D., Leboeuf, G., & Schwienbacher, A. (2014). Crowdfunding models: Keep-it-all vs. all-or-nothing. *SSRN Electronic Journal*.
- Du, Z., Li, M., & Wang, K. (2019). The more options, the better? Investigating the impact of the number of options on backers' decisions in reward-based crowdfunding projects. *Information & Management, 56*, 429-444.
- Forbes, H., & Schaefer, D. (2017). Guidelines for Successful Crowdfunding. *Procedia CIRP, 60*, 398-403.

- Frydrych, D., Bock, A. J., Kinder, T., & Koeck, B. (2014). Exploring entrepreneurial legitimacy in reward-based crowdfunding. *Venture Capital, 16*(3), 247-269.
- Fundly. (2017). *Crowdfunding Statistics*. Retrieved from Fundly: <https://blog.fundly.com/crowdfunding-statistics/>
- Gerber, E., Hui, J., & Kuo, P. (2012). Crowdfunding: Why people are motivated to post and fund projects on crowdfunding platforms. *Proceedings of the International Workshop on Design, Influence, and Social Technologies: Techniques, Impacts and Ethics, 2*, 10.
- GoFundMe. (2019). *GoFundMe*. Retrieved August 25, 2019, from GoFundMe: <https://www.gofundme.com/>
- Hahn, J., & Lee, G. (2013). Archetypes of crowdfunders' backing behaviors and the outcome of crowdfunding efforts: An exploratory analysis of kickstarter. *In Conference on Information Systems and Technology (CIST)*.
- Hardy, W. (2013). How to perfectly discriminate in a crowd? A theoretical model of crowdfunding. *University of Warsaw, Working Paper No. 16/2013 (101)*. Retrieved from https://www.wne.uw.edu.pl/files/7813/9636/7876/WNE_WP101_2013.pdf
- Harms, M. (2007). What drives motivation to participate financially in a crowdfunding community? *SSRN Electronic Journal*.
- Howe, J. (2006). The rise of crowdsourcing. *Wired Magazine, 14*(6), 1-5.
- Hu, M., Li, X., & Shi, M. (2015). Product and Pricing Decisions in Crowdfunding. *Marketing Science, 34*(3), 331-345.
- Kickstarter. (2019). *Kickstarter*. Retrieved 2019, from Kickstarter: <http://www.kickstarter.com>
- Kraus, S., Richter, C., Brem, A., Cheng, C. F., & Chang, M. L. (2016). Strategies for reward-based crowdfunding campaigns. *Journal of Innovation & Knowledge, 1*(1), 13-23.
- Kuppuswamy, V., & Bayus, B. L. (2013). Crowdfunding creative ideas: The dynamics of project backers in kickstarter. *SSRN Electronic Journal*.
- Lacey, R., & Sneath, J. Z. (2006). Customer loyalty programs: Are they fair to consumers? *Journal of Consumer Marketing, 23*, 458-464.
- Lehner, O. (2014). The formation and interplay of social capital in crowdfunded social ventures. *Entrepreneurship & Regional Development, 26*(5), 478-499.
- Marom, D., & Shade, O. (2013). Are the life and death of a young start-up indeed in the power of the tongue? lessons from online crowdfunding pitches. *SSRN Electronic Journal*.

- Miller, Z. (2019, May 30). *Which type of crowdfunding should you choose for your business?* Retrieved August 25, 2019, from The balance small business: <https://www.thebalancesmb.com/what-type-of-crowdfunding-to-choose-for-business-985191>
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing, 29*, 1-16.
- Morduch, J. (1999). The microfinance promise. *Journal of Economic Literature, 37*, 1569.
- Moutinho, N., & Leite, P. M. (2012). Innovation through crowdfunding: A quantitative and qualitative analysis of kickstarter. In *CINET 2012: 13th International CINet Conference, Continuous Innovation Across Boundaries*.
- Nocke, V., Peitz, M., & Rosar, F. (2011). Advance-purchase discounts as a price discrimination device. *Journal of Economic Theory, 146*, 141-162.
- Ordanini, A., Miceli, L., Pizzetti, M., & Parasuraman, A. (2011). Crowd-funding: transforming customers into investors through innovative service platforms. *Journal of Service Management, 22*, 443-470.
- Poetz, M., & Schreier, M. (2012). The value of crowdsourcing: can users really compete with professionals in generating new product ideas? *Journal of Product Innovation Management, 29*. doi: <https://doi.org/10.1111/j.1540-5885.2011.00893.x>
- Qiu, C. (2013). Issues in crowdfunding: Theoretical and empirical investigation on Kickstarter. *SSRN Electronic Journal*.
- Rao, H., Xu, A., Yang, X., & Fu, W. (2014). Emerging dynamics in crowdfunding campaigns. In *International Conference on Social Computing, Behavioral-Cultural Modeling, and Prediction* , (pp. 333-340). Springer, Cham.
- Roehm, M. L., Pullins, E. B., & Roehm, H. A. (2002). Designing loyalty-building programs for packaged good brands. *Journal of Marketing Research, 39*, 202-213.
- Scheibehenne, B., Greifeneder, R., & Todd, P. (2010, October). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research, 37*, 409-425.
- Schwienbacher, A., & Larralde, B. (2010). Crowdfunding of small entrepreneurial ventures. *The Oxford Handbook of Entrepreneurial Finance*.
- Shi, S. (2018). Crowdfunding: Designing an effective reward structure. *International Journal of Market Research, 60*(3), 288-303.

- Szmigiera, M. (2019, July 1). *Kickstarter: number of total and repeat project backers 2019*. Retrieved from statista: <https://www.statista.com/statistics/288345/number-of-total-and-repeat-kickstarter-project-backers/>
- The Startups Team. (2018, December 3). *Key Crowdfunding Statistics*. Retrieved from Startups: <https://www.startups.com/library/expert-advice/key-crowdfunding-statistics>
- Thies, F., Wessel, M., & Benlian, A. (2014). Understanding the dynamic interplay of social buzz and contribution behavior within and between online platforms—evidence from crowdfunding. *In 35th International Conference on Information Systems*. Auckland.
- Wash, R., & Solomon, J. (2014). Coordinating donors on crowdfunding websites. *In 17th ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW)*, (pp. 34-48). Vancouver, BC.
- Zheng, H., Li, D., Wu, J., & Xu, Y. (2014). The role of multidimensional social capital in crowdfunding: A comparative study in China and US. *Information and Management*, *51*(4), 488-496.