WHAT IS THE RECIPE FOR SUCCESS? AN EMPIRICAL ANALYSIS OF CROWDFUNDING PROJECT PERFORMANCE

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DECLARATION

I hereby declare that this thesis is my original work and it has been written by me in its entirety. I have duly acknowledged all the sources of information which have been used in the thesis.

This thesis has also not been submitted for any degree in any university previously.

Sun Daoyuan

11st January 2016

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CONTENTS

LIST OF FIGURES AND TABLES

Summary

Crowdfunding is a burgeoning research topic thanks to the explosive rudiment and development of several successful crowdfunding platforms, such as Kickstarter, Indiegogo, and Gofundme. These crowdfunding platforms have raised billions of capital and fostered thousands of innovative projects in the last few years. Some successfully funded crowdfunding projects have grown up into profitable and sustainable enterprises, such as Pebble (E-Watch), Jide (Android Tablet and PC), and Coolest (Cooler Machine). However, not every crowdfunding project can raise enough money to realize their goals, not to mention growing up into promising, large enterprises. Therefore, we hope to figure out a sensible and feasible recipe to guide project founders to achieve their crowdfunding success. In this thesis, we propose a research framework based on the signaling framework and other related theories. An econometric approach is employed to study the effects of different web-feature factors that are considered to be able to signal the success of projects with the data collected from Kickstarter. Our findings uncover the underlying mechanism that the founders' previous reputation, reciprocity history, and embedded video can positively signal the crowdfunding success. These findings are consistent with background theories such as reputation theory, reciprocity theory, as well as media richness theory. Moreover, we carry out an exploratory study to analyze the moderation effect of the variable, project category. The results show that category can only

moderate the effect of content related factor, namely narrative richness, but not reputation or reciprocity. Therefore, we conclude that reputation and reciprocity have more stable and steady effects among different categories. This study finds out a feasible recipe for project founders with which they can take actual actions to figure out a plan to achieve their funding goals thus bring their ideas to reality. Specifically, based on the results of our study, we encourage the project founders to be "high-score students" with good reputation reflected by their previous created projects, "generous philanthropists" who also act as backers to others' projects rather than just propose their own projects, and "conscientious artists" who have devotion to make the profile page of their projects more vivid and attractive by adding elements such as pictures or videos. Additionally, we also uncover a very interesting fact about profile embedded pictures, that they are quite complicated, and thus require much more future studies. Last but not least, we hope this study can contribute to the crowdfunding literature, and jumpstart the development of many small-medium nascent entrepreneurships that are making use of crowdfunding platforms to raise money for their projects.

1. Introduction

Crowdfunding is a burgeoning internet-facilitated phenomenon which enables people to connect the blueprints of their ideas to realities by gaining supports from a distributed audience (Hui et al. 2013), and often by giving out certain rewards as returns for the supporters (Gerber et al. 2012). Such platform is also a popular online community which can presents the 'wisdom of the crowd' (Surowiecki 2004), and develops at a considerable growth rate recently (Giudici et al. 2012). Ordanini et al. (2011) defined crowdfunding as a collective effort by individuals who network and pool their money together to invest in, or support the campaigns of others. It provides a means for entrepreneurs, societal institutions, small businesses, startups and even artists to finance their projects, especially when there are difficulties, such as frictions of distance and different funding patterns (Agrawal et al. 2014; Beaulieu et al. 2015).

Particularly, crowdfunding collects rather small streams of money from the crowd (Thies et al. 2014), instead of a large amount of funds from professionals (Belleflamme et al. 2014; Marcin Gierczak et al. 2014). This character makes it special and outstanding compared with traditional approaches for fund raising. It is considered as one of the financing alternatives, such as microfinance, peer-to-peer lending, and etc. (Bruton et al. 2015). And this financing innovation now has quickly

diffused and boomed across the world and aggregated immense small and individual transactions every second (Bruton et al. 2015).

In 2013, more than 500 crowdfunding platforms all over the world raised a total $5.1 billion amount of money. The total amount increased by 81% compared with the previous year ($2.7 billion in 2012), and such trend is still prosperous[1]. World Bank (2013) predicts that the global crowdfunding market potential could be between $90 billion to $96 billion by 2025, and this innovative approach of fundraising is gradually reinforced as a global financing ecosystem. Kickstarter, one of the most successful and popular representatives of crowdfunding platform, undergone a prosperity in 2014: 3.3 million people in nearly every country in the world pledged more than half a billion dollars in more than 22,252 creative projects, and 20% (5 items) of TIME best inventions (25 items totally) are surprisingly born from this crowdfunding website[2]. Such tremendous expansion of crowdfunding also promotes the new economy, as well as small or medium enterprises globally.

The thriving trend of crowdfunding has also drawn much attention from the academia. Many studies try to explore the specificities of crowdfunding, and come out with interesting results which enrich our understanding of crowdfunding. Some streams of research look into the spillover impacts on societal and public sectors, such as education,

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[1] *Source: http://www.statista.com/topics/1283/crowdfunding/*
[2] *Source: https://www.kickstarter.com/year/2014*

business, finance, and healthcare (Alexander 2006; Andreoni 1990; Beaulieu et al. 2015; Lyytinen and Rose 2003). Some other streams of research focus on the specificity, social setting, as well as fundamental related issues of crowdfunding, such as the privacy concern (Burtch et al. 2013a), projects antecedents (Burtch et al. 2013b), herd effects (Zhang and Liu 2012), as well as profile design and reward design of crowdfunding projects (Agrawal et al. 2013; Beaulieu and Sarker Suprateek 2013; Herzenstein, Scott, et al. 2011; Mollick 2014).

Essentially, in the research area of crowdfunding, the success of crowdfunding projects is a most popular and intensive topic that constantly draws enormous attentions. Since crowdfunding has become an innovative and important financing alternative, especially for small and medium enterprises, the success of crowdfunding projects determines the future of these enterprises to a large extent (Belleflamme et al. 2015; Bruton et al. 2015; Mollick 2014). Almost all crowdfunding project founders are eager to acquire the success of their fundraising through crowdfunding campaigns, which can help to jumpstart their nascent business and startups. However, only a small fraction of them can eventually realize their hopes. The overall success rate of crowdfunding projects in Kickstarter and Indiegogo are less than 50%, presented as 43.4% and 9.9% respectively[3]. And among those unsuccessful projects, about 70% only raised roughly 20% of

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[3] *Source: http://www.visionlaunch.com/crowdfunding-success-rates-by-category/*

their funding goals, which are ironically named as "the crowdfunding caveat"[4].

The definition of the success of crowdfunding is that the projects founders are able to raise an amount of money, which is more than or equal to the initial amount of funding goal during a limited campaign period. Undoubtedly, various factors can affect the success of crowdfunding projects. For instance, electronic Word of Mouth (eWoM) is increasingly important, and it is positively associated with a higher amount of backers and the success of projects, although there are fewer cross-platform effects (Thies and Universit 2014). The herd behavior of the crowd also affects the success of projects in a positive way (Herzenstein, Dholakia, et al. 2011; Zhang and Liu 2012). What is more, curiosity (Bretschneider et al. 2014), monetary compensation (Bretschneider et al. 2014; Burtch et al. 2014), reciprocity (Zvilichovsky et al. 2013), social network linkage (Burtch et al. 2014; Ward and Ramachandran 2010), and peer referrals effect (Burtch et al. 2014) are also important factors that have differentiated effects on promoting or prohibiting the crowdfunding success.

Even though plenty of studies have been operationalized to broaden our understanding of the success of crowdfunding projects (such as Haas et al. 2014; Mollick 2014; Zvilichovsky et al. 2013), our knowledge is still limited on this topic, which requires more efforts to put into. In

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[4] *Source: http://www.pcworld.com/article/2049399/the-crowdfunding-caveat-most-campaigns-fail.html*

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order to help crowdfunding project founders to gain more insights into the recipe for the success of crowdfunding and to help them jumpstart their small and medium enterprises, we choose the success of crowdfunding as the research topic of this thesis. Importantly we conduct our research from the aspect of founders, and concentrate on the web-feature factors that are manipulative to them. By studying the effects of these factors on the success of projects, we hope to figure out a feasible approach to promote the success of crowdfunding projects for project founders.

Our research questions are:

RQ1: What web-feature factors will promote the success of crowdfunding projects?

RQ2: What are the differences between the success recipes for crowdfunding projects belonging to different categories?

In this thesis, we conduct econometric empirical analysis with the data gathered from Kickstarter. We propose main hypotheses based on reputation theory, reciprocity theory, and media richness theory. Our study sheds light on the success recipe of crowdfunding projects by identifying the web-feature factors which have significant effects on the success of projects, and also leads to the conclusion that the recipe of success of crowdfunding projects belonging to different categories varies significantly. Essentially our findings aim to provide feasible guidance for crowdfunding founders, and boost the development of their nascent entrepreneurships.

The remainder of this paper is organized as follows. In the section of literature review, we summarize the literature on crowdfunding and the related research. In the section of theoretical background and hypotheses, we propose and justify our hypotheses based on theories, namely reputation theory, reciprocity theory, as well as media richness theory. In the subsequent sections, we employ econometrics approaches to verify our hypotheses empirically based on the crawled data from Kickstarter. And finally, we present our main findings, practical implication, theoretical contribution, limitations and future studies in the section of discussion and conclusion.

2. Literature Review

2.1 Definition of Crowdfunding

Crowdfunding is inspired by the concepts of micro-finance, crowdsourcing, and entrepreneurial capital (Mollick 2014; Schweinbacher and Larralde 2010), and is a newly emerging financial tool to bridge the gap between talented entrepreneurs with no sufficient money to realize their ideas and potential backers who are searching for promising projects to put money in, either for the purpose of getting certain rewards or just for personal preferences. Therefore, crowdfunding is not only a proliferating online platform for fundraising, but also an incubator for enterprises, especially the small and nascent ones yearning for a smooth start. This new financial alternative uses platform-mediated approach to aggregate individual investors to pool relatively small amounts of money together, and so as to reach certain funding goals (Bruton et al. 2015). Essentially the crowdfunding platform is an internet-facilitated online community wherein social setting specificity, Web 2.0 technology, and other related processes pertaining to finance and delivery operationalize with each other (Arvidsson 2015; Haas et al. 2014; Mollick 2014). Particularly, this method has more freedom in its way to connect the project founders and backers compared to many other financial tools, for it is a very direct way that has no standard financial intermediaries, which eliminates the frictions of distance and different funding patterns (Agrawal et al. 2014; Mollick 2014). Accordingly, Mollick

(2014) concludes a more concrete concept of crowdfunding as *"Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit– to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries".*

The core elements for crowdfunding include technology, capital funding, and the crowd (Beaulieu et al. 2015). Therefore, the basic process for crowdfunding is to reach the crowd, and then to raise fund via Internet technology. Firstly, the creators or founders of the crowdfunding projects carefully edit and post the details of their projects on some crowdfunding websites, such as Kickstarter, and Indiegogo and so forth. The posted details include a concrete description of the key idea, a vivid presentation included pictures or videos, a framework of the whole project, and several types of rewards given to backers, and etc. There is usually no fixed format of how to present the projects, but it should be attractive and persuasive enough to draw the attentions of potential backers, and further to convince them to back it. The potential backers would read the posted content. After some consideration, which can be either a careful balance of input and output, or sudden impulsion based on personal preferences, they would make decisions on whether to back the project or not. Since most backers are normal individuals, the money they pledged is usually of small amount. After a certain period of time, if all of these small streams of money together reach the founders' funding goals,

crowdfunding projects are regarded as successful projects. In the case of successful projects, founders will carry forward their projects, and implement their campaign commitments to their backers, as initially indicated on the web profile. Otherwise, if the amount of raised money cannot reach their goals, these crowdfunding projects are defined as failed projects, and the former raised money will be refunded to their backers after their campaigns.

2.2 Stakeholders of Crowdfunding

A stakeholder refers to any group or individual that can be identified as having the power, impact, legitimacy, or the ability to impart urgency that may affect an organization's objectives and decision-making process, or be affected by the achievement of such organization (Atkinson et al. 1997; Freeman 1984; Mitchell et al. 1997). Accordingly, in the context of crowdfunding, there are three key stakeholders, i.e. platform owner (website service provider), project founder, and backer (Beaulieu et al. 2015). All stakeholders play important roles in the crowdfunding platforms and intensively interact with each other to facilitate the fund raise, resources exchange, as well as influence the performance of projects, or be influenced in diverse ways (Beaulieu et al. 2015; Greenberg and Gerber 2014).

Platform owner, namely the crowdfunding website service provider, plays a critical and basic role that connects project founders and potential backers. It provides an interface wherein project founders demonstrate their projects details and crowdfunding campaigns

(Beaulieu et al. 2015). And potential backers get exposure to crowdfunding projects, interact with founders, and make their pledge decisions (Beaulieu et al. 2015). The platform is also designed to facilitate the whole process of crowdfunding projects, and also offer supplementary services including online payment, communication, privacy protection, delivery, as well as legal rights protection when the project participants are faced with any fake or promise-broken issues, making the whole experience as convenient, user-friendly, and secure as possible.

Founders are individuals, groups, startups, or enterprises that demonstrate their ideas, drafts, or non-mass products on crowdfunding platform to persuade distributed audience into pledging their projects and bringing their projects to realities. Equally important, backers are individuals who contribute money to pledge crowdfunding projects, interact with both founders and other backers during the decision-making, and also comment on the project campaign profile or in social media websites. Notably, we define backers as a broad concept including all the audience of projects, no matter they pledge money or not[5]. Moreover, backers could also be founders, and vice versa.

2.3 Types of Crowdfunding

Michael Sullivan firstly coined crowdfunding as a term in his blog, and this term's initial connotation is charitable donations (Castelluccio

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[5] *People who browse the crowdfunding website are treated as backers in this paper. We can actually classify backer in depth, if they pledge money on any project, then they are pledged backers, otherwise they are potential backers.*

2012). Now with the thriving and amazing development of crowdfunding, different types have sprouted and enriched the connotation of crowdfunding. More than 500 crowdfunding sites could be generally categorized into four varieties (Figure 1): reward-based (e.g.: *Kickstarter, Indiegogo*), loan-based (e.g.: *Prosper*), donation-based (e.g.: *Readyfor*) and equity-based (e.g.: *Equitynet*) (Burtch, Ghose & Sunil Wattal 2013a; Ahlers et al. 2012; Belleflamme et al. 2015; Griffin 2012; Mollick 2014). Moreover, according to Ibrahim (2012), crowdfunding could also be categorized into five types according to the complexity of platform structure. Figure 2 below demonstrates the categorizations of crowdfunding.
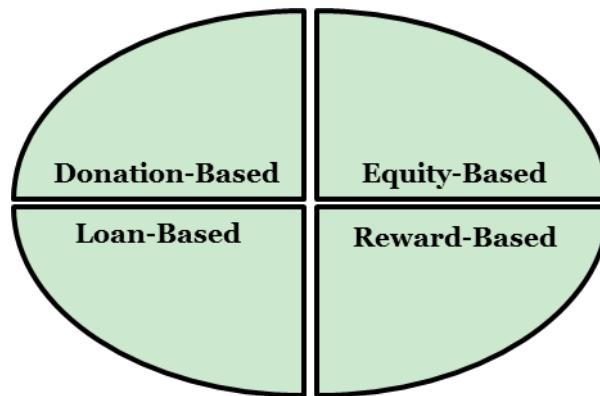
Figure 1: *Categorizations of Crowdfunding by Rewarding Type*
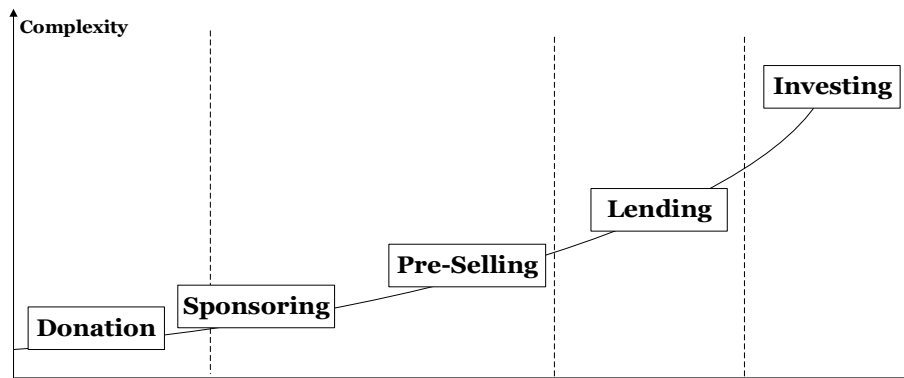
Figure 2: *Categorizations of Crowdfunding by Complexity*

The donation crowdfunding is the elementary type, and its reward is usually the gratitude from project founders, instead of monetary or physical reward. Sponsoring crowdfunding usually has either donation-based or reward-based rewarding schemes, and it is one of the main types of crowdfunding. Other main types of crowdfunding are pre-selling and lending which are similar to the forms of reward-based and loan-based crowdfunding respectively. And the most complex type of crowdfunding is investing type, which rewards its backers with the equities or future profits of founders' firms.

Accordingly, different categories of crowdfunding have varied legal requirements. The US government passed the *Jumpstart Our Business Startups Act* (also known as the JOBS Act that is signed into law by President Barack Obama in 2012) to regulate and encourage the fundraising of small and medium enterprises[6]. However, equity-based/investing-type crowdfunding is generally not permitted by JOBS Act. Actually the equity-based crowdfunding is much complicated and risky. In fact, it is quite rare compared to other categories of crowdfunding, with less than 5% of all crowdfunding platforms belonging to this category (Crowdsourcing.org 2012). In many places, it is prohibited by local governments, as to be considered as too risky with a lack of legal regulations.

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[6] *Source: https://en.wikipedia.org/wiki/Jumpstart_Our_Business_Startups_Act*

In this thesis, we focus on reward-based crowdfunding type, because this type of crowdfunding is more practical and has more extensive scenes and generalizability.

2.4 Crowdfunding Success

Pebble, an electronic smartwatch company which started its business with a successfully funded crowdfunding project on Kickstarter, won the award for 2014 most innovative products, and it is referred as "the first" and "better than some of the biggest names in the field of consumer electronics" (Kovach 2015). It is unambiguous that the initial supports from the Kickstarter backers helped *Pebble* grow from a small startup to a leading firm in smartwatch industry. Besides *Pebble*, there are many other examples, such as *Jide Tech*, *Ouya* and *IDW Games*. These examples indicate that the success of crowdfunding project is very critical for startups and small and medium enterprises. Unfortunately, not every crowdfunding project will be successfully funded after their crowdfunding campaign. Many of them may end up with insufficient funding to reach their goals which means failing to carry out the project plan. In such cases, not only the project founders will lose their confidence, waste time and passions, but also the backers will find themselves lose their support to projects, and also the time value of their money, even if they can get back their money. Hence, the success of projects is important for both founders and backers. This drives us to consider whether there are any patterns in the performance of crowdfunding projects. If so, the founders or backers may reduce the unpredictability in the performance or result of certain crowdfunding

projects, so as to increase the success rates of their projects. This is the problem that we aim to concentrate on in our research. Briefly, we aim to find the successful recipe for crowdfunding projects, and try to provide some actionable guidelines for project founders from their point of view.

The study on the success of crowdfunding projects is valuable in understanding the inner mechanisms of crowdfunding success and is beneficial to the developments of small and medium enterprises in decentralized crowdfunding market. The factors that will exert significant effects on the success of crowdfunding projects are numerous and complicated. Too many influencing factors, such as the asymmetric information issue, social information issue, narrative communication issue, make it more difficulty in identifying the success patterns. Even worse, many project founders are confused about what they should do and what they can do in improving the success ratio of crowdfunding. Therefore, the studies on the crowdfunding success are still needed.

In previous studies, some factors are examined, and their effects are studied via plenty of research models. Belleflamme et al. (2014) employ a unified model to uncover how to choose a proper crowdfunding platform and make a beneficial managerial decision for nascent firms in fundraising, and they also discuss the endogenous issue about the quality realization of crowdfunding project based on asymmetric information. Allison et al. (2014) analyze how linguistic cues affect the

crowdfunding motivations and fundraising outcomes in a loan-based crowdfunding platform, and they conclude that different narrative types have varied effects on the performances of crowdfunding projects. Herzenstein, Scott, et al. (2011) also put efforts into the analysis of the narrative of crowdfunding profile, and they further ascertain that more identity claims in crowdfunding narratives will reversely impair the performances of loan-based crowdfunding projects.

Lin et al. (2013) uncover the economic effects of friendship in loan-based crowdfunding platform. They employ the signaling framework and conduct the *ex-ante* analysis to obtain their findings. Similarly, Mollick (2014) also includes signaling framework to find the associations between the projects performances with many factors, such as spelling errors in campaign, updates speed, video, and etc.

Agrawal et al. (2011) try to examine the peer effects on crowdfunding performances. They find that in the early stage of crowdfunding, the peers are actually the founders' family and friends due to asymmetric information and geographic dispersion. And these early peers' comments and pledge can effectively jumpstart their crowdfunding campaigns. Besides, Ward and Ramachandran (2010) also prove that peer effects can drive the demand of crowdfunding for experience product because of limited individual information and costly information acquisition which can validly endorse the significance of peer effect on crowdfunding performance. Moreover, Smith et al.

(2012) extend the research of peer effect and social information to the donation/charity-based crowdfunding platform, and they also conclude consistent results that the previous backing and other social information will positively influence other backers pledge, as well as the crowdfunding performance.

Additionally, Zvilichovsky et al. (2013) conduct a novel study that focuses on the dual roles of crowdfunding founders. This study tries to understand what benefits founders will gain if they also back other projects, namely if they are both backers and founders. Since the supply and demand are the double interactive sides of the economic market including the crowdfunding platform, the dual roles of founders have significant effects on the crowdfunding outcomes (Zvilichovsky et al. 2013).

Table 1: *Summary of Related Literature*

Reference	Summary
Allison et al. (2014)	*Linguistic cues, i.e. narrative types, affect the outcomes of crowdfunding.*
Belleflamme et al. (2014)	*Beneficial managerial decision of nascent firms on crowdfunding types and the impact of quality uncertainty and information asymmetry.*
Lin et al. (2013)	*The economic effects of friendship in decentralized electronic markets based on the signalling framework.*
Mollick (2014)	*Analysis on the factors that influence the projects' quality and accordingly affect the success of them.*
Ward and Remanchandran	*Peer effects affect the consumption of online crowdfunding.*

(2010)	
Zvilichovsky et al. (2013)	*Dual roles of crowdfunding. Backing history has a significant effect on crowdfunding performance.*
Agrawal et al. (2011)	*Family and friends can jumpstart the crowdfunding in very early stage due to asymmetric information and geographic dispersion.*
Herzenstein et al. (2011)	*Identity claims in narrative of crowdfunding/p2p profile impair the performance of loan.*
Smith et al. (2012)	*Social information can signal the audience crowd of charities and accordingly affect the morale of them.*

Based on the aforementioned literature on crowdfunding performances, project founders may thoroughly find out what aspects they should think twice, and put more efforts in those aspects before they launch and publicize the crowdfunding projects. However, project founders are still in dire need to find feasible recipes to achieve the success of project. Although, many factors' effects on the project success are clear, they still don't know what to do and how to apply the research findings to their daily actions. The obvious reason to this fact is that many studies do not provide an analysis from the perspective of project founders. Their findings have more academic value rather than practical meanings. Therefore, our research aims to clarify what factors affect the performances of crowdfunding campaign from the aspect of project founders, and concentrate on the factors that project founders are able to adjust and operate. Only in this way, project founders can follow our guidelines to adjust their project, and to obtain potential success by steering their project campaigns to perfection. Moreover, we also explore to find out whether projects belonging to different

categories have different success recipes, namely the moderation effect of different categories. We employ econometric approach and cooperate with the crawled data from Kickstarter to address our research intentions.

3. Theoretical Foundation and Hypotheses

The preparatory material of Kickstarter suggests founders that the key to demonstrating preparation effectively is to include a video and a clear description of the project story[7]. This instruction is drawn from the experience generated through hundreds of thousands of past project campaigns with differentiated presentations and performances. From a superficial but obvious point of view, if crowdfunding founders put more efforts into their campaign demonstration (e.g. include more details, more pictures and videos, or refine and deliberate their stories), their chance of improving the crowdfunding performance could also be larger. Furthermore, according to the signaling theory, the inclusion of a video is a clear signal and least minimum of preparation (Mollick 2014). And some other factors of crowdfunding projects can partially signal the underlying quality, preparation efforts, as well as the future performances (Ahlers et al. 2012; Herzenstein, Dholakia, et al. 2011; Lin et al. 2013).

In economics study, signaling theory is a component of contract theory, and it is fundamentally based on asymmetric information between two parties (Spence 1973), which is initiated by (Akerlof 1970) and Spence (1973). Since the asymmetric information issue is quite universal, previous studies have applied the signaling framework into selection scenarios in many disciplines (Connelly et al. 2011). In addition, there

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[7] *Source: Kickstarter's Creator Handbook, the official guidance website of Kickstarter.*

are many studies applying signaling theory into the context of crowdfunding. Previous studies on crowdfunding employ the signaling theory to identify the effects of multiple factors (Chen et al. 2009; Lin et al. 2013; Ward and Ramachandran 2010; Zheng et al. 2014). Herzenstein et al. (2011) find the increase of the identity claims of crowdfunding profiles can signal the decrease of these campaigns' performances. What is more, Lin et al. (2013) conduct a study based on signaling framework to find whether friendship can be a signal to increase the probability of crowdfunding success.

Signaling framework is a coherent research approach rooted in signaling theory, and it has both *ex-ante* and *ex-post* analysis (Lin et al. 2013). In the pioneering work of Spence (1973), the workers signal their quality through education. The *ex-ante* analysis is to prove that the educated workers should be more likely to find good employment and get paid more, given that they are signaling higher quality (Lin et al. 2013; Spence 1973). And the *ex-post* analysis is to prove that these educated works should be more productive, given their high quality (Lin et al. 2013; Spence 1973). The signaling framework could also be applied into this research topic of crowdfunding. In this study, we want to uncover what factors could signal the success or good performance of these project. And we carry out the *ex-ante* analysis to uncover what kind of crowdfunding projects is more likely to be successfully funded. By doing this, we can offer practical and coherent guidance for founders to boost the performances of their crowdfunding projects. In

another word, we try to find "the recipe for the success of the crowdfunding project".

In order to address our two research questions, we try to identify what factors, manipulative for founders, can convey progressively strong information cues that signal the performances of crowdfunding projects. Therefore, we propose a research framework as follows.
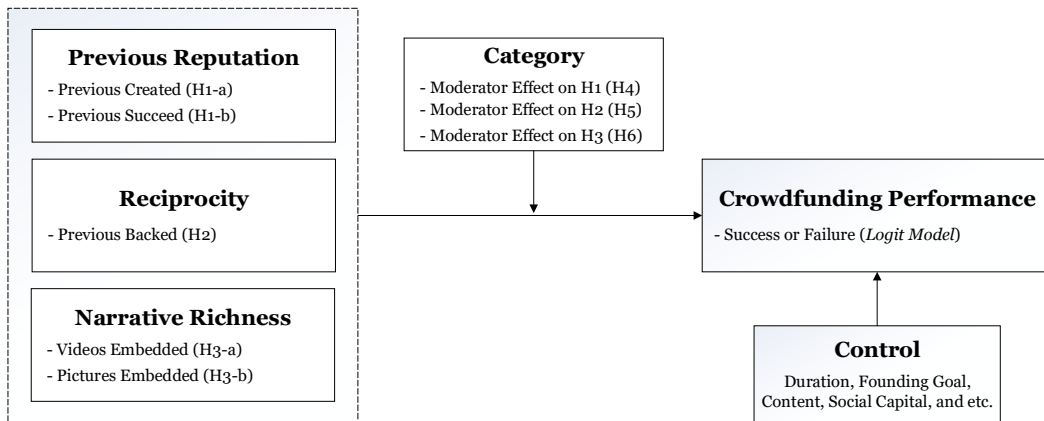
Figure 3: *Research Framework and Hypotheses*

In our research framework, the dependent variable is the performance of the crowdfunding project. The crowdfunding performance contains at least two dimensions, i.e. whether the project is successful or not and how much money the project raises during the campaign. In this study, we focus on one dimension, the success of crowdfunding projects. Therefore, our dependent variable is the indicator of project success.

The focal variables in our study are the previous reputation, reciprocity history, as well as the narrative richness of crowdfunding projects. These factors are not only the influential factors to the crowdfunding

performance, but also manipulative factors that project founders are capable of improving and adjusting accordingly. We focus on these factors because: 1) Availability. Unlike many other factors such as the quality of labour (e.g. Average education level of project creators) or the societal background of the project team, there factors are directly from information available in the website, and they could greatly match with the Research Question 1. 2) Quantifiability. These are factors that can be well quantified using information available in the website. And these factors are very sensible and obvious to crowdfunding audience, which are crucial to include them in our quantitative models. 3) Importance. According to past studies and web design, these factors are most significant in the scene of crowdfunding which transfer important information cues to potential backers in their decision-making process. Thus, we choose to study them in detail, and try to discover the recipe of success from the actionable aspects of project founders.

Then, we provide our theoretical backgrounds for these factors in the following section. What is more, the project category is introduced as the moderate variable. And we try to explore whether there are significant differences in the recipes of success for projects belonging to different categories. Moreover, factors, such as the duration of a project, the funding goal, social factors, and content related factors, are included into the empirical model as control variables.

3.1 Previous Reputation

Reputation is broadly defined as "what agents (e.g. buyers) believe or expect from other agents (e.g. sellers)" (Cabral 2012). Previous studies of online reputation highlight its positive effect that can increase sales performance and mitigate information asymmetry (Dellarocas 2003; Dewan and Hsu 2004; Zhang 2006).

The founders' reputation also has a positive effect on the performances of crowdfunding projects. Crowdfunding campaigns, through the internet, have no way to let backers to conduct due diligence and face-to-face interaction, which puts the crowdfunding into a condition in which founders disclose information and project details based on "virtual trust" (Agrawal et al. 2013). And this trust is usually facilitated by the project founders' reputation, which means the crowdfunding founders online reputation plays a critical and beneficial role in crowdfunding content (Agrawal et al. 2013; Ahlers et al. 2012; Cabral 2012). The *Economist*[8] also affirms that reputation can boost the development of nascent firms on crowdfunding. Moreover, reputation could also serve as an indicator to help backers to detect fraud and moral hazard (Agrawal et al. 2013; Cabral 2012). Therefore, we can conclude that reputation serves as an effective antidote for online crowdfunding campaigns that are harmed by the asymmetric information issue (Agrawal et al. 2013). Accordingly we expect it has positive effects on the performances of crowdfunding projects.

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[8] *Source: http://www.economist.com/node/21556973*

We characterize the Kickstarter web features that may demonstrate the reputation of projects founders. The number of founders' backed projects, created projects, and failed projects, which can be measured as the proxies of the previous reputation, potentially signal the performances of founders' projects.

When backers review the previous project creation history and the unsuccessful projects of founders, they will build up awareness on the prior experience and success rate of project founders, and that shapes the founder's reputation from backer's point of view. Therefore, we propose the hypotheses that the project founders' previous reputation may positively signals the performances of crowdfunding campaigns.

> **_Hypothesis 1a_**: *The number of previously created projects of project founder **positively** signals the performance of crowdfunding campaign.*

> **_Hypothesis 1b_**: *The number of previously unsuccessful projects of project founder **negatively** signals the performance of crowdfunding campaign.*

3.2 Reciprocity

Reciprocity, a social psychology concept, refers to the behavioural response to perceived kindness and unkindness (Falk and Fischbacher 2006). Reciprocity is a powerful determinant in human behaviour (Falk and Fischbacher 2006; Gouldner 1960). A straight example is "I

give so that you will give in return", a Golden Rule (or ethic reciprocity) which is emphasized in many religion and ethical literature[9].

The reciprocity also fits the context of online crowdfunding (Zheng et al. 2014; Zvilichovsky et al. 2013). When backers review the founder's backing history, they will build up awareness of whether that founder is generous and kind in backing other people's projects. The previous backing history of founders can be seen as a signal that indicates founders' reciprocity contribution to the crowd community (Gouldner 1960; Zvilichovsky et al. 2013). Since the reciprocity will lead to trust and reputation (Emerson 1962), and similar kind actions of other people (Falk and Fischbacher 2006), the previous backing history also has a positive effect on making potential backers to pledge and support their project. Therefore, the previously backing history will signal the performances of crowdfunding projects in a positive way. Accordingly we propose the *Hypothesis 2* as follows.

> **Hypothesis 2**: *The number of previously backed projects of project founder* **positively** *signals the performance of crowdfunding campaign.*

3.3 Narrative Richness

Media richness theory, also known as information richness theory, argues that media with different richness differs in the ability to transmit information or cues (Daft and Lengel 1984, 1986). This theory originates from information processing theory and intends to cope with

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[9] *Source: Wikipedia, archived on 28th Oct., URL: https://en.wikipedia.org/wiki/Golden_Rule;*

communication challenges faced by organizations. The richness of media/information is defined by Daft and Lengel (1984, 1986) as "the ability of information to change understanding within a time interval". For instance, a written sentence cannot deliver visual and emotional cues, and therefore, it is less rich than a video as a communication medium. This theory also states that the more ambiguous and uncertain a communication task is, the richer should the media be in order to fit it Daft and Lengel (1986). Hence, to use richer media for equivocal tasks and leaner media for non-equivocal tasks will improve the performance of communication task. Hereafter, we will justify our hypotheses based on this theory and other related literature.

In the research context of crowdfunding, the campaign profiles are the interactive media that communicate the project founders and backers. And the communication task here is to let the project founders to demonstrate their crowdfunding projects to backers. Backers may make the pledge decision based on the information from the campaign profiles as well as their own preferences. The communication task in this context is that project founders demonstrate the details including the meanings, values, as well as some rewards of their crowdfunding campaign, and try to persuade backers into making pledges on their projects. Therefore, the content of the campaign profile will influence the performance of crowdfunding projects. Moreover, due to the asymmetric information issue as well as the weakness and limitation of the online crowdfunding platform, the equivocation and uncertainty

underlying in the communication process constantly call for richer campaign profile to facilitate backers' pledge.

The content of crowdfunding campaign profile, including pictures and videos embedded as well as the profile articles, determines the richness of the communication between project founders and potential backers, and accordingly affects the performances of crowdfunding campaigns. As for the pictures and videos, they can convey more information compared to plain text content and also draw higher attentions and purchase (Suh 1998; Kickstarter Creator Handbook; Gierczak et al. 2014; Liu 2014).Therefore, if the campaign profile contains more pictures and videos, it will convey richer information about the project. Consequently, such "rich" profiles could be treated as the signals of better performances of crowdfunding (similar to that workers' education can signal their hiring results). Accordingly we propose hypothesis *H2a* and *H2b* as follows.

> **Hypothesis 3a**: *The quantity of embedded pictures in the crowdfunding profile **positively** signals the performance of crowdfunding campaign.*

> **Hypothesis 3b**: *The quantity of embedded videos in the crowdfunding profile **positively** signals the performance of crowdfunding campaign.*

Moreover, besides the aforementioned factors, we also focalize on the condition that projects belonging to different categories may have diversified success rates, even their funding objective, founders' reputation, video and pictures, and other factors are quite similar. We

27

wonder why there are such differences between projects belonging to different categories, and also expect to find out the potential moderation effect of project category. Therefore, we intend to do an exploratory study on analysing the potential moderation effect of project category. We propose the following explorative hypotheses on the moderation effect of project category.

> ***Explorative Hypothesis 4****: The effect of the previous reputation of project founder on the performance of crowdfunding campaign will be **moderated** by project category.*

> ***Explorative Hypothesis 5****: The effect of the reciprocity of crowdfunding campaign on the performance of crowdfunding campaign will be **moderated** by project category.*

> ***Explorative Hypothesis 6****: The effect of the narrative richness of project founder on the performance of crowdfunding campaign will be **moderated** by project category.*

4. Data Collection and Description

4.1 Data Source and Crawling

In this study, we choose Kickstarter as our data source to implement our empirical analysis. Kickstarter is a notable crowdfunding platform, based in America and launched in 28th April 2009. Now Kickstarter has become the No. 1 largest[10] crowdfunding website in the world, and its Alexa Rank is 384th globally[11], and 216th in the United States. Kickstarter has reported that it facilitated $1.5 billion in pledges and brought about 200,000 crowdfunding projects into life. The Kickstarter contains multiple categories for crowdfunding projects, i.e. 15 categories covered Art, Comics, Food, Technology, Dance, and so on. Now Kickstarter is a successful model for other crowdfunding platforms. And moreover, it has become an important financial alternative tool for us. Therefore, we choose it as our data source to help us understand the inner mechanism of crowdfunding, and to clarify the recipe of crowdfunding success.

In order to acquire the data of crowdfunding projects, we program a Java web crawler to obtain requisite data. We employ the *HTMLparser* Java package, *MySQL JDBC* Java package, as well as other related sources to implement our crawler program. The crawling contains

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[10] *Source: Forbes, archived on 19th Sep., URL:*
http://www.forbes.com/sites/chancebarnett/2013/05/08/top-10-crowdfunding-sites-for-fundraising/;
[11] *Source: Alexa top sites, archived on 19th Sep., URL:*
http://www.alexa.com/siteinfo/kickstarter.com;

three main procedures, i.e. *URL* crawling, web page content crawling, and key information crawling. The figure below demonstrates our procedures.

| URL List Crawling | → | Webpage Crawling | → | Key Information Crawling |

Figure 4*: Data Crawling Process*

Firstly, we obtain the projects' homepage *URLs* as the unique identification for each project. Then based on those *URLs*, we obtain the source code of the homepages of projects. These source codes contain the *HTML* tags, *JS* files, and some scripts codes. We employ the regular expression method to locate and obtain the requisite information for crowdfunding projects.

After these crawling procedures, we obtain the data of crowdfunding projects, and the data spans four years, i.e. 2010, 2011, 2012, and 2013. Besides the projects' homepage, we also capture the information of the founders' profile and receive the information on their past history and verification information on Kickstarter.

4.2 Data Description

In our dataset, we have 15 diverse categories and almost 90 thousand project observations totally. We choose "Comics" and "Technology" to conduct the empirical analysis to find the recipe for the crowdfunding success and to clarify the moderation effect that different categories can regulate the performances of crowdfunding projects.

Why do we choose these two categories? It is because that first, these two categories have close quantity of projects observations, and secondly these two categories also have significant and distinguished differences with each other. Therefore, these two categories are appropriate and valid to facilitate our empirical analysis. The descriptive statistics about Cat_i is shown below. And we introduce the dummy variables for categories, i.e. $i.Cat_i$.

Table 2: Descriptive Statistics *of Categories*

	Freq.	Percent	Cum.
Comics	2128	55.63%	55.63%
Technology	1697	44.37%	100.00%
Total	3825	100.00%	

The table below demonstrates the meaning of each factor briefly. We will describe each variable in the following content in detail later. Moreover, we conduct the correlation analysis for these variables, which is attached in the appendix.

Table 3: *Factors Explanation*

Indicator	Explanation
(1) R_i	The actual raised amount of money
(2) S_i	Indicator of success $(= 1, \ if \ R_i > G_i)$
(3) $logB_i$	Log-transformed number of pledged backers
(4) D_i	Campaign duration
(5) $i.Cat_i$	The dummy variable for project categories
(6) $logG_i$	Log-transformed funding objective (goal)
(7) FAQ_i	Number of frequent-asked questions

(8) BP_i Number of backed projects

(9) CP_i Number of created projects

(10) FP_i Number of failed projects

(11) V_i Quantity of videos

(12) P_i Quantity of pictures

(13) $logT_i$ Log-transformed number of friendship ties

(14) VR_i Indicator of verification

(15) $logCM_i$ Log-transformed quantity of comments

* The correlation table is attached in the appendix.

Actual Raised Amount is the total amount of money that backers pledged to a certain crowdfunding project. We use R_i to indicate this factor. This factor is for judging whether the project is success depending on the Kickstarter's "ALL-or-Nothing" rule.

Indicator of Success is a binary factor that indicates whether the crowdfunding succeeds or not. According to the mean of this factor, 0.38, we can conclude that the overall average success rate is 38%. We use S_i to indicate the success of crowdfunding project.

Number of Backers is the number of pledged backers, and we use B_i to indicate this factor. Due to the same reason that this factor is very large in standard deviation, we also introduce the log-transformation to reduce skewness. $logB_i = \ln(B_i + 1)$. However this factor has a very high correlation with the amount of raised money, which will introduce bias in statistical inference of the effect of other variables. As it is not a focal variable which we want to concentrate on, we eliminate it from

further analysis to avoid bias in estimation of coefficients due to multicollinearity issue caused by it.

Campaign Duration means the campaign time of crowdfunding projects. The average campaign time is 38.86 days. We use D_i to represent this factor.

Funding Objective (Goal) is the amount of money that founders hope to raise. Kickstarter use the "*All-or-Nothing*" rule or threshold model that founders' money is only collected if their goal is reached (Mollick 2014). Currently, this is the dominant method for crowdfunding platform, because this method has strong incentive for founders to set realistic project goals (Mollick 2014). In this thesis, we use G_i to represent the funding objective of crowdfunding projects. Because this factor is also too disperse, we use $logG_i$ to facilitate our empirical analysis, and $logG_i = \ln(G_i)$.

As for *the number of FAQs, quantity of Comments, quantity of Pictures and Videos,* we employ FAQ_i, CM_i, P_i, and V_i to indicate them. However, the ***Quantity of Comments*** is too disperse, and thus we use $logCM_i$ to eliminate the skew, herein $logCM_i = \ln(CM_i)$.

Association Ties of Founder indicates the number of friends that are associated with the project founder in social network. Since this information sector is optional to founders, we use zero (0) to indicate two cases: 1) founders do not allow the access to Kickstarter, and an extreme condition 2) there is no friend associated with project

founders. T_i is used to represent the number of friendship ties of founders. Likewise, $logT_i$, equals to $\ln(T_i + 1)$, is introduced to minimize the estimation skewness.

For *number of Created Projects, number of Backed Projects, and number of Failed Projects*, we use CP_i, BP_i, and FP_i to indicate them respectively. As for the *indicator of Verification*, we employ VR_i to represent.

The empirical dataset contains 3825 observations across four years. And technology and comics categories have 1697 (44.37%) and 2128 (55.63%) observations respectively. The descriptive statistics of aforementioned factors are shown in the following table.

Table 4: *Descriptive Statistics of Variables*

	Obs.	Mean	Std. Dev.	Min	Max
Dependent Variable					
S_i	3825	0.38	0.49	0.00	1.00
Control Variable					
$logB_i{}^1$	3825	14.56	60.00	1.00	1496.20
D_i	3825	38.86	15.83	4.00	91.00
$i.Cat_i{}^2$	3825	0.56	0.50	0.00	1.00
$logG_i$	3825	6.31	1.52	0.10	14.51
FAQ_i	3825	1.17	2.80	0.00	43.00
$logT_i$	3825	3.23	3.11	0.00	8.52
$logCM_i$	3825	0.43	0.74	0.00	7.65
VR_i	3825	0.11	0.32	0.00	1.00
Focal Variable					
CP_i	3825	1.98	1.91	1.00	27.00
FP_i	3825	0.52	1.10	0.00	10.00

BP_i	3825	10.68	22.76	0.00	309.00
V_i	3825	0.96	0.80	0.00	16.00
P_i	3825	3.88	5.96	0.00	53.00

1 This factor is eliminated in empirical analysis section.
2 In the moderation effect model, $i.Cat_i$ are used as moderator.

The correlations between these factors are shown in the appendix table.

Since the number of backers has a very high correlation with the actual

amount of raised money, we eliminate this factor to prohibit the

multicollinearity issue so as to prevent bias in estimation.

5. Empirical Modeling

5.1 Measurement

In this study, we employ a cross-sectional logit model to evaluate the effects of our focal variables on the success of projects, and the moderation effect of the project category. The details of our dependent variables and independent variables are described in the following content.

Dependent Variables: In order to find the success recipe of crowdfunding projects, we should firstly evaluate what measures could be used to evaluate the success or performance of crowdfunding campaign. Obviously, since Kickstarter adopts an "All-or-Nothing" rule, we can find that the project success depends on whether projects raise enough or more amount of money than their funding objectives. Therefore, we can use the actual amount of money that crowdfunding project collected compared with their initial funding objectives to know whether these projects are funded successfully or not. Therefore, we employ the indicator variable of project success as our dependent variables in this study.

Independent Variables: We have control variables and focal variables for hypotheses (H1, H2, and H3). As for focal variables, the previous reputation could be measured by the number of previously created projects and unsuccessful projects of the founders. And for the reciprocity, as we described in the theory part, it can be measured by

36

the number of projects the founders previously backed. Lastly, the narrative richness, we include the quantity of pictures and embedded videos as appropriate measure.

As for control variables, given plenty of research on crowdfunding success, we have known the factors that will affect the performances of projects, so we control these variables to identify the effects of our focal independent variables. The control variables in our study are $D_i, logG_i, FAQ_i, logT_i, logCM_i$, and VR_i. It is clear that project duration and funding objectives can affect the performances of crowdfunding projects. As for FAQ, Chung (2015) clarify a positive effect that more FAQ could increase the success of crowdfunding project. Also, the social network friendship, online community comments, and founders' identity verification could influence the performance of crowdfunding in some ways. According to the social capital theory (Bourdieu 1986; Giudici et al. 2013; Halpern 2004), the friendship and community comments could serve as the amount and strength of founders' social capital (Putnam 2001), and they have critical determinant effects on the crowdfunding campaign (Giudici et al. 2013; Mollick 2014). Therefore, we include these factors as our control variables.

5.2 Model Specification

The cross-sectional logit model is introduced to clarify the mechanisms for signaling the success of crowdfunding projects, i.e. S_i. Importantly, the logit model is applicable to evaluate what factors will affect the

performances of crowdfunding projects. The model specification is described as follows:

$$P(S_i) = \Lambda(\mathrm{X}_i{}'\gamma) = \frac{e^{\mathrm{X}_i{}'\gamma}}{1 + e^{\mathrm{X}_i{}'\gamma}} + \mu_i, i = 1,2,3, \ldots, n$$

Wherein, $\mathrm{X}_i{}'\gamma = \gamma_0 + \gamma_1 logB_i + \gamma_2 D_i + \gamma_3 i.Cat_i + \gamma_4 logG_i + \gamma_5 FAQ_i + \gamma_6 logT_i + \gamma_7 logCM_i + \gamma_8 VR_i + \gamma_9 CP_i + \gamma_{10} FP_i + \gamma_{11} BP_i + \gamma_{12} V_i + \gamma_{13} P_i$

In this model, we use binary outcomes logit model, and employ Robust *GLM* methods to estimate coefficients in order to obtain results that are robust and more convincing. By identifying what factors influence the performances of crowdfunding significantly, we can find the success recipe that leads to good performance of crowdfunding projects, and provide a feasible approach for project founders to improve the success rate of their campaigns.

5.3 Moderation Effect

In order to clarify whether projects from different categories have different mechanisms in achieving their success, we conduct the moderation effect model to address our exploratory research questions. We conduct the moderation analysis based on the cross-sectional logit model, and introduce the interaction terms. The model specifications for moderation hypotheses (*H4, H5, and H6*) are presented in the following equation.

Moderation Effect Model:

$$P(S_i) = \Lambda(\mathrm{X}_i{}'\Upsilon) = \frac{e^{\mathrm{X}_i{}'\Upsilon}}{1 + e^{\mathrm{X}_i{}'\Upsilon}} + \mu_i, i = 1,2,3, \ldots, n$$

$$\textbf{\textit{Wherein}}, X_i{'}\Upsilon = \Upsilon_0 + \Upsilon_1 logB_i + \Upsilon_2 D_i + \Upsilon_3 i.Cat_i + \Upsilon_4 logG_i + \Upsilon_5 FAQ_i +$$
$$\Upsilon_6 logT_i + \Upsilon_7 logCM_i + \Upsilon_8 VR_i + \Upsilon_9 CP_i + \Upsilon_{10} FP_i + \Upsilon_{11} BP_i + \Upsilon_{12} V_i + \Upsilon_{13} P_i +$$
$$\Upsilon_{14} CP_i \times i.Cat_i + \Upsilon_{15} FP_i \times i.Cat_i + \Upsilon_{16} BP_i \times i.Cat_i + \Upsilon_{17} V_i \times i.Cat_i + \Upsilon_{18} P_i \times$$
$$i.Cat_i$$

Then in the following section, we conduct the analysis on whether the project category can moderate the effect of each focal factor on the performances of crowdfunding projects.

6. Data Analysis and Results

6.1 Empirical Results and Analysis

We employ *Stata* software to obtain the regression results for our empirical models. Firstly we conduct the analysis using only control variables as our vanilla baseline model. Then we include all independent variables and control variables to conduct our analysis. The empirical results are shown below.

Table 5: *Results of Empirical Models*

VARIABLES	(1) Controls	(2) All
DV	S_i	S_i
Control Variables		
D_i	-0.00618*	-0.00619*
	(0.00316)	(0.0034)
$i.Cat_i$	0.266**	0.274**
	(0.1111)	(0.118)
$logG_i$	-1.126***	-1.211***
	(0.0467)	(0.0515)
FAQ_i	0.0824***	0. 0945***
	(0.0224)	(0.0237)
$logT_i$	0.0766***	0.0726***
	(0.0243)	(0.0258)
$logCM_i$	4.036***	3.927***
	(0.183)	(0.190)
VR_i	0.269	0.157
	(0.137)	(0.195)
Focal Variables		
CP_i	-	0.240***
		(0.0559)
FP_i	-	-1.016***
		(0.100)
BP_i	-	0.00650***
		(0.00300)
V_i	-	0.181***
		(0.0663)
P_i	-	-0.0226**
		(0.0107)
Cons.	4.619	4.990***

	(0.295)	(0.329)
Pseudo R²	0.4619	0.5083
Obs.	3825	3825

Robust Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The ***Pseudo R²*** of our vanilla baseline model is only 0.4619, and all control variables are significant besides the verification indicator of founders' identify. The ***Pseudo R²*** of our main model increases to 0.5083, which is a significant improvement on the explanation power of the model. And for focal variables, most of them are significant.

In order to interpret the coefficients of our analysis results, we introduce the *log-odds ratio* method to help us. The procedures are shown below.

Our logistic model is:

$$P(S_i) = \Lambda(X_i{}'\gamma) = \frac{e^{X_i{}'\gamma}}{1 + e^{X_i{}'\gamma}} + \mu_i, i = 1,2,3,\dots,n$$

The odd ratio of success and failure is:

$$\frac{P(S_i)}{1 - P(S_i)} = e^{X_i{}'\gamma}$$

Then the log-odds ratio of success and failure is:

$$\ln\frac{P(S_i)}{1 - P(S_i)} = X_i{}'\gamma$$

$$= \gamma_0 + \gamma_1 logB_i + \gamma_2 D_i + \gamma_3 i.Cat_i + \gamma_4 logG_i + \gamma_5 FAQ_i + \gamma_6 logT_i$$

$$+ \gamma_7 logCM_i + \gamma_8 VR_i + \gamma_9 CP_i + \gamma_{10} FP_i + \gamma_{11} BP_i + \gamma_{12} V_i + \gamma_{13} P_i, i$$

$$= 1,2,3,\dots,n$$

The coefficient of created projects (CP_i) is 0.240, and it is statistically positively significant. Therefore, we can infer that the founders' previous creating history has significant positive effect on the success of their current crowdfunding projects, and one more previously created project by founders will increase the log-odds success ratio by 0.240. It is a very copious improvement for the crowdfunding performance. The coefficient of failed projects (FP_i) is -1.016 and it is statistically negatively significant. Thus, the founders' previous failed project history has negative effect on the success of crowdfunding projects, and one more failed project will decrease the log-odds success ratio by 1.016. This result is very reasonable because the failed project is a negative signal in reality, such as a blemish of project founders, which informs the potential backers that this founder is probably not "capable" of delivering good projects. Since both the hypotheses on founders' reputation (***H1a*** and ***H1b***) are proved, we can conclude that the reputation of founders has significant effects on crowdfunding project performances.

As for backed projects (BP_i), its coefficient is 0.0065 and it is statistically positively significant. The positive coefficient of it means that if founders have one more previously backed project, the log-odds success ratio will increase by 0.0065. Therefore, we can conclude that the hypotheses on projects founders' reciprocity behaviour measured by backing history significantly affects the performances of crowdfunding projects. Thus, the ***H2*** is supported.

As for the narrative richness, the coefficients of the quantity of embedded videos (V_i) and pictures (P_i) are 0.181 and -0.0226 respectively, and both of them are statistically significant. Therefore, per increase of video can increase the log-odds success ratio by 0.181, and accordingly increase the probability of project success. However, the quantity of pictures has the opposite effect on project performances. Each added picture will lead to 0.0226 loss on the log-odds success ratio of crowdfunding project. This result is opposite to our hypothesis *H3b* which expects a positive effect of embedded picture while the regression demonstrates a negative effect of embedded pictures. This may be because that the effect of pictures on the performance of projects are more complex than we thought, due to the complexity of pictures embedded in the website, such as its ambiguous definition of what a picture really is since many pictures also contain textual information.

The following table demonstrates the results of our hypotheses analysis based on the empirical results. Luckily, most of our hypotheses are supported.

Table 6: *Hypotheses Testing Results*

Construct	Hypothesis	Support
Previous Reputation	*H1a (Created Projects)*	Yes
	H1b (Failed Projects)	Yes
Reciprocity	*H2 (Backed Projects)*	Yes
Narrative Richness	*H3a (Embedded Video)*	Yes
	H3b (Embedded Picture)	**No**

According to the aforementioned analysis, we can find out feasible guidance to help crowdfunding founders to increase the success ratio of their projects. We have further explanations in the discussion and implication section on what is the recipe of the crowdfunding success.

After analysing the above results of our model, we successfully conclude that most of our hypotheses are supported. Moreover, we also provide the results of the marginal effect of each variable to enhance our understanding about the outcomes of the econometric models. The table below demonstrates the coefficients of the marginal effects of the variables in our previously conducted model. The economic meaning of the marginal effect coefficient is that one unit augment of a certain variable will lead to such corresponding marginal change to the dependent variable. Here, we didn't provide the specific analysis of each factor's marginal economic effect.

Table 7: ***Results of Economic Marginal Effects***

VARIABLES	(1) Vanilla	(2) Main
DV	S_i	S_i
Control Variables		
D_i	-0.00143* (0.000733)	-0.00139* (0.000764)
$i.Cat_i$	0.0613** (0.0254)	0.0611** (0.0261)
$logG_i$	-0.261*** (0.0108)	-0.272*** (0.0115)
FAQ_i	0.0191*** (0.00564)	0.0212*** (0.00528)
$logT_i$	0.0177***	0.0163***

	(0.00563)	(0.00578)
$logCM_i$	0.935***	0.881***
	(0.0495)	(0.0507)
VR_i	0.0640*	0.0358
	(0.0332)	(0.0454)
Focal Variables		
CP_i	-	0.0539***
		(0.0126)
FP_i	-	-0.228***
		(0.0222)
BP_i	-	0.00146**
		(0.000673)
V_i	-	0.0406***
		(0.0148)
P_i	-	-0.00507**
		(0.00239)
Obs.	3825	3825

*Robust Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1*

6.2 Moderation Results and Analysis

In order to clarify the moderation effect of project category, we conduct the following analysis to address it. By including the interaction terms between category and our focal independent variables, we obtain the regression results as follows. Again, we use Robust GLM to estimate the effects.

Table 8: *Results of Moderation Models*

VARIABLES	(1) Moderation
DV	S_i
Control Variables	
D_i	-0.00627*
	(0.00340)
$i.Cat_i$[1]	-0.130
	(0.2255)
$logG_i$	-1.225***
	(0.0517)
FAQ_i	0.0904***
	(0.0242)

$logT_i$	0.0711***
	(0.0259)
$logCM_i$	3.942***
	(0.192)
VR_i	0.181
	(0.198)
Focal Variables	
CP_i	0.280***
	(0.0922)
FP_i	-1.143***
	(0.198)
BP_i	0.0076*
	(0.0045)
V_i	-0.0274
	(0.0991)
P_i	0.00570
	(0.0233)
Interaction Terms	
$CP_i \times i.Cat_i$	-0.0532
	(0.112)
$FP_i \times i.Cat_i$	0.168
	(0.227)
$BP_i \times i.Cat_i$	-0.000385
	(0.00572)
$V_i \times i.Cat_i$	0.602***
	(0.161)
$P_i \times i.Cat_i$	-0.0603***
	(0.0220)
Cons.	5.202***
	(0.341)
Pseudo R²	0.5115
Obs.	3825

1 In this test, $i.Comics = 1$, $i.Technology = 0$.
*Robust Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1*

Our hypotheses on project founders' reputation expects that different

category can moderate the effect that founders' reputation, and then

regulate the effects on the performance of crowdfunding campaign.

However, our empirical results do not provide valid evidence to these

hypotheses, and there are not significant moderation effects of the

project category on founders' previous reputation. In other words, the

number of founders' previously created project and failed projects have

stable effects on the crowdfunding performances across different

categories. And similarly, the effect of reciprocity of founders is also neutral to different categories. Our hypotheses 4 and 5 are not proved according to the empirical results. Yet, as for the narrative richness, we find that project category has significant moderation influence on the effect of video and picture for crowdfunding performance. The coefficient of the video interaction term is 0.602 which means that for projects belonging to Comics category, the video quantity has larger positive effect on the performances of their campaign (0.602 extra improvements to the log-odd success ratio). And picture quantity has adverse moderation effect that for projects belonging to Comics category, the picture quantity has more negative effect on their performances (0.0603 extra attenuations to the log-odds success ratio). Our results demonstrate that the moderation effects on founders' previous reputation and their reciprocity history are not significant and that the embedded videos and pictures can be moderated by the project category. Our exploratory hypotheses of moderation effect simply suppose that all our focal variables can be moderated by category. However, if we think deeper to analyze the web design structure and the real pledging process of crowdfunding, we can find that the founders' reputation and reciprocity are more versatile factors, but the project campaign content is more specific, and usually is particular according to their project realities or categories. Thus, potential backers will treat the reputation and reciprocity of founders equally even their projects belong to different categories. While for the content related factors, they may expect different things according to the

characteristics of different projects. Therefore, we find that only content related factor, i.e. narrative richness constructed by embedded videos and pictures, can be moderated by project categories.

Similar to the previous section, we also provide the economic marginal effect coefficient of the previous moderation effect model.

6.3 Model Diagnostic

Goodness-of-fit. In order to find a general gauge on whether our model fits the data well enough, we implement the Goodness-of-fit test as follows. The Hosmer and Lemeshow's (H&L) goodness-of-fit test is commonly used. The idea behind this test is that the predicted frequency and observed frequency should match with each other closely, and that the more closely they match, the better the model's goodness-of-fit is.

Table 9: *the H&L Goodness-of-fit Test Results*

Group	Prob.	Obs_1	Exp_1	Obs_0	Exp_0	Total
1	0.0116	1	2.0	382	381.0	383
2	0.0339	3	8.5	379	373.5	382
3	0.0701	13	19.6	370	363.4	383
4	0.1283	34	36.8	348	345.2	382
5	0.2337	73	66.7	310	316.3	383
6	0.3905	131	118.4	251	263.6	382
7	0.6210	189	192.0	194	191.0	383
8	0.8457	296	284.9	86	97.1	382
9	0.9753	346	352.4	37	30.6	383
10	1.0000	375	379.6	7	2.4	382

Number of observations =3825, Number of groups = 10

Hosmer-Lemeshow $\chi^2(8)$ *= 21.64*

Prob.>χ^2 = 0.0056

With a p-value equal to 0.0056, we can tell that the Hosmer and Lemeshow's goodness-of-fit test indicate that our model fits the data quite well. Moreover, this finding can help us to prove the credibility of our model and analysis results.

Multicollinearity Test. Multicollinearity, also known as collinearity for short, describes the condition that two or more independent variables in the model are approximately determined by a linear combination of other independent variables of the model. When multicollinearity occurs, the results of logit regression are not reliable, or even wrong. There are two commonly used measures for multicollinearity test, namely tolerance and VIF (variance inflation factor). The following table demonstrates the outcomes of the test analysis.

Table 10: *the Multicollinearity Test Results*

Variable	VIF	Sqrt. VIF	Tolerance	R^2
S_i	1.86	1.36	0.54	0.46
D_i	1.05	1.03	0.95	0.05
$i.Cat_i$	1.32	1.15	0.76	0.24
$logG_i$	1.67	1.29	0.60	0.40
FAQ_i	1.24	1.11	0.81	0.19
$logT_i$	1.11	1.05	0.90	0.10
$logCM_i$	1.79	1.34	0.56	0.44
VR_i	1.41	1.19	0.71	0.29
CP_i	2.14	1.46	0.47	0.53
FP_i	1.71	1.31	0.58	0.42

BP_i	*1.22*	*1.11*	*0.82*	*0.18*
V_i	*1.12*	*1.06*	*0.89*	*0.11*
P_i	*1.17*	*1.08*	*0.86*	*0.14*
Mean VIF		*1.45*		

As for tolerance, it equals to 1 minus R2 which results from the regression of other variables on that variable. The corresponding VIF simply equals to 1/tolerance. If the variables are not correlated with each other, the R2 will be zero (0), and the corresponding tolerance and VIF should be 1. Otherwise, the R2 will close to 1, the tolerance will be close to zero, and therefore the corresponding VIF would be quite large. In our model, we find that the VIF of each variable as well as the mean VIF is quite close to 1 (the criteria of this test is less than 10). Therefore, we can conclude that there is not multicollinearity issue in our model.

6.4 Ad-hoc Analysis

In the main analysis, we select two categories, i.e. technology and comics, to conduct the moderation test. Our results imply that the founders' previous reputation and reciprocity history cannot be moderated by project category. While for the narrative richness, measured by the project content videos and pictures, are significantly moderated by the project category. Our findings uncover that the founders' background specs on their reputation and reciprocity have versatile effects for different categories, but the effects of content related factors are varied according to the project category.

In order to be more convincing, we implement the ad-hoc analysis to make further analysis on the moderation effect of crowdfunding category. We choose another category, i.e. Design, to conduct a cross-match empirical analysis with our previous sample categories. The number of observations is 3707. This category contains graphic design, product design, interactive design, and etc., and it is similar to the compositions of technology, such as 3D printing, Apps, electronic design, as well as hardware design. Therefore, comparing with the combination of Technology and Comics, the new combination serves as a control group that contains similar categories. The table below shows the new combinations of similar categories.

Table 11: *the Cross-match Category Combinations*

	Main Group	Control Group
Categories	*Technology and Comics*	*Technology and Design*

For the new combination group, we implement a moderation test based on the same empirical model as our main analysis. We expect that the similar categories combinations in the control group have insignificant or less effective moderation effects on category, which can help us to verify that the moderation effect of different project category. The following content describes the empirical results of our analysis. We again use robust inference method to do the estimation.

Table 12: the Ad-hoc Analysis on Moderation Effect

VARIABLES	(1) *Moderation* *Main Group[1]*	(2) *Moderation* *Control Group*
DV	S_i	S_i
Control Variables		
D_i	-0.00627* (0.00340)	-0.0096** (0.0034)
$i.Cat_i$[2]	-0.130 (0.2255)	-0.1896 (0.1948)
$logG_i$	-1.225*** (0.0517)	-1.2166*** (0.0443)
FAQ_i	0.0904*** (0.0242)	0.0816*** (0.0154)
$logT_i$	0.0711*** (0.0259)	0.0786*** (0.0146)
$logCM_i$	3.942*** (0.192)	1.4513*** (0.0438)
VR_i	0.181 (0.198)	0.3307* (0.1867)
Focal Variables		
CP_i	0.280*** (0.0922)	0.2562*** (0.0867)
FP_i	-1.143*** (0.198)	-1.1586*** (0.1756)
BP_i	0.0076* (0.0045)	0.0066 (0.0047)
V_i	-0.0274 (0.0991)	-0.0049 (0.0887)
P_i	0.00570 (0.0233)	0.0198 (0.0180)
Interaction Terms		
$CP_i \times i.Cat_i$	-0.0532 (0.112)	-0.0274 (0.0948)
$FP_i \times i.Cat_i$	0.168 (0.227)	0.0545 (0.2019)
$BP_i \times i.Cat_i$	-0.000385 (0.00572)	-0.0029 (0.0050)
$V_i \times i.Cat_i$	0.602*** (0.161)	0.1920* (0.1144)
$P_i \times i.Cat_i$	-0.0603*** (0.0220)	-0.0169 (0.0190)
Cons.	5.202***	7.5594***
Pseudo R²	0.5115	0.5182
Obs.	3825	5405

1 The results in Main Group are from the results in Table 7.
2 In Control Group, $i.Design = 1, i.Technology = 0$.
*Robust Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1*

The interaction term on video quantity is significant, but it is less effective than the result of the main analysis. Also the *p-value* of this term almost equals to the largest threshold, 0.1. The interaction term on picture quantity is insignificant. Thus, these results largely satisfy our expectations that similar categories have no or less effective moderation effects in the control group. The ad-hoc analysis on the moderation effect of project category is a supplementary analysis which helps us to provide a more solid analysis on the moderation effect of different project categories.

Then we can conclude that the exploratory hypotheses 4 and 5 are not supported. However the exploratory hypothesis 6 is supported, namely the project category has moderation effect on the narrative richness of crowdfunding project, which means that it will accordingly regulate the performance of projects belonging to different categories. These results demonstrate that the moderation effect is more effective for categories which have huge differences and varied contents. Moreover, our results show that the category can only moderate the factors that are related to the project content instead of other factors, i.e. founders' reputation and reciprocity.

7. Discussion and Conclusion

By introducing the signaling analysis framework, we implement the *ex-ante* signaling analysis on what factors can signal the performances of crowdfunding projects, and conduct the exploratory analysis on the moderation effect of project category. Our results find out the recipe for the success of crowdfunding campaign, and also clarify the moderation effect of the project category that moderates the effects of narrative richness factors.

7.1 Main Findings

Based on reputation theory, reciprocity theory, media richness theory as well as other related literature, we propose a research framework which contains several hypotheses that aims to find out what factors will affect the performance of crowdfunding project. By characterizing the features of web design, we collect the founders' requisite data from Kickstarter and select two categories of data observations to facilitate our main empirical analysis and the exploratory study. Moreover, we also include an ad-hoc analysis for the exploratory study on the moderation effect of project category.

For the previous reputation of project founders, we find that the number of founders' created projects has a positive and significant effect on the performances of crowdfunding campaigns. The created projects experience, also can be seen as the experience of crowdfunding and entrepreneurship, may increase the founders' knowledge in

running the crowdfunding campaign. Thus, the more created projects could serve as a signal to indicate the confidence and persistence of founders and also signal a potentially good performance. As for the previous failure experience, measured by the failed project number, this factor, which reveals how many projects the project founder failed previously, negatively influences backers' pledging decision and weakens the reputation of project founders. Then this factor can serve as a negative signal to the success of crowdfunding projects. Therefore, we can suggest project founder to concern about their creating history and try to be a "high-score student" in Kickstarter, namely to maintain a superb reputation.

For the reciprocity of project founders, we find it has a positive and significant effect on the project performance. The reciprocity history or founders, measured by the number of backed projects, is an indicator of founders' enthusiasm, reciprocity and contribution to the online community that signals an upward shift to the project performances. The reciprocity contribution not only increases the performance of their projects, but also leads to a cyclical beneficial environment to the online crowdfunding community. Therefore, we suggest project founder to be a "generous philanthropist" in Kickstarter, namely encouraging them to participate in this community as an active and generous backer, and to help other founders.

As for narrative richness, we find that video has a positive effect but picture has a negative effect on the crowdfunding performance in

general. Actually, we know that the narrative of crowdfunding campaign is very critical as the main communication intermediary in the project campaign. Thus, project founders should pay more attention to this part and try to implement accessible resources to provide more richness media, such as videos, to help potential backers to understand the project and encourage them to pledge. Thus, we hope project founder can be a "conscientious artist" in constructing their project profiles. As for the counterintuitive negative effect of pictures, we consider this is because that the pictures included in the profile are quite complex, with many are actually of textual contexts instead of pure images. Therefore, it requires more sophisticated techniques to process the pictures in order to reveal the real effect of picture itself, which we look forward to coping with in future study.

The aforementioned guidance is concluded from our research findings, and it provides a feasible recipe to help project founders to obtain good performance in a crowdfunding campaign. To be a "high-score student", a "generous philanthropist", and a "conscientious artist" are our sincere and proven advices to project founders, which can bring beneficial helps to their crowdfunding projects.

Not coincidently, this finding is in line with the Kickstarter's official guidance which suggests founders to embed at least one video in the crowdfunding profile. What is more, we provide more concrete analysis on what is the feasible approach to increase the project performances. As for the exploratory study on the moderation effect of project

category, we find out that the founders' previous reputation and reciprocity history cannot be moderated. That is to say, project founders' reputation and reciprocity history have versatile effects to projects belonging to different categories, namely the effect of founders' reputation and reciprocity is steady among different categories. Nonetheless, the narrative richness factor can be moderated by the project category. In our analysis, projects belonging to Comics category will benefit more from videos than projects belonging to Technology category. Our finding implies that the narrative richness factors are more stochastic, and they have varied effects on the crowdfunding performances according to different categories. Therefore, we conclude that narrative richness, which is determined by the project content and directly related to the focal project, can be moderated by project category while the reputation and reciprocity, which mainly imply the conditions of founders' previous backgrounds, cannot be moderated by project category. Therefore, we suggest project founders pay attention to their project contents, and also write proper project contents according to the project categories.

Our research sheds a light on finding a feasible recipe for project founders, and take the aspect of what founders can actually do to their projects. Our hypotheses on founders' reputation and reciprocity are proved so that both of them can positively signal the success of crowdfunding projects. Although our hypothesis on content embedded picture is not supported (opposite significant), the positive signaling function of content embedded video is supported by our empirical

analysis. Moreover, our exploratory study on the moderation effect of project category uncovers that the factors which have direct relationships to the project founders cannot be moderated by category. However, the content related factor can be moderated significantly by the project category. These findings imply the critical mechanisms which regulate the process of backers' pledging behaviors.

7.2 Practical Implications and Theoretical Contribution

This thesis aims to find out a feasible recipe for the success of crowdfunding projects, and also analyze the potential moderation effect of project category. We construct a research framework based on reputation theory, reciprocity theory, and media richness theory. According to our results, we provide several guidelines for crowdfunding founders to improve their success, and encourage them to be "high-score student", "generous philanthropist", and "conscientious artist" in Kickstarter. The practical implications and theoretical contributions are described as follows.

Practical Implications: We provide sincere and proven guidance to project founders that suggests them to be "high-score student", "generous philanthropist", and "conscientious artist". Firstly, founders should be active in the crowdfunding community. They can increase the engagement of the community by creating more projects, but also concern about the inferior project history which is harmful to their future projects. Moreover, project founders should be generous to other project founders, because their reciprocity contribution and

philanthropic acts to the whole community will also benefit themselves. Secondly, in order to improve the performances of crowdfunding projects, project founders should be conscientious about their project contents, and try to embed more videos to attract more backers. As for pictures, although our empirical results do not provide significant supports, we suggest they can try to improve the quality, rather to stuff low-quality pictures. Lastly, our finding implies that the project category can moderate the effects of narrative richness factors, yet cannot moderate the founders' reputation and reciprocity factors. Therefore, our finding uncovers a feasible approach that encourages project founders to prepare specific contents of projects according to the project categories, which means project founders should be very sensitive to present the proper content of their projects to backers (e.g. in this study, projects from comics require more videos because the product of that project is also visible). Bearing the aforementioned guidelines in mind, project founders can improve the performances of their projects, and also boost their entrepreneurships.

Theoretical Contribution: Our first contribution is to implement a study that provides a feasible recipe for project founders, and from the perspective that project founder can actually do some actionable adjustments to improve their project performance. And accordingly, those guidelines can help them to jumpstart the development of nascent entrepreneurs. Based on theories and literature, our research provides a comprehensive analysis on what factors can signal the performances of crowdfunding projects. Moreover, we implement the

exploratory analysis on the moderation effect of project category, and try to clarify a more meticulous recipe to project founders. An ad-hoc study is also conducted to enhance the validity of our explorative study. Our results on the moderation effect of project category may reveal a potential improvement on the factors' characteristics, which means that different factors may also have different functionalities that depend on the exact meanings and characteristics of them.

Generally speaking, our study contributes to the current literature on the crowdfunding study, especially the study on the crowdfunding performance. Additionally, another contribution is that our research framework and empirical analysis take the novel aspect that project founders can make actionable adjustments to their projects. Last but not the least, our exploratory study on the moderation effect of project category may ignite more studies on analyzing this research topic, i.e. different categories have tremendous differences in success ratio, and many other related issues.

7.3 Limitations and Future Research

Our research aims to clarify the factors that signal the crowdfunding performances, and also provide a feasible recipe for project founders to facilitate their actions. Although we succeed in obtaining most expected results, our study still contains several limitations. Firstly, the empirical analysis is conducted based on cross-sectional data, instead of panel data. As we know the cross-sectional data hides some other information that will help us bring out more precise and concrete

results. Therefore, our data limitation weakens our analysis and findings. So some future research could try to extend the research by using panel data and corresponding panel econometric model to conduct the empirical analysis. Secondly, our hypothesis on embedded picture is not supported, and it is oppositely significant. Although we provide a possible reason for this inverse result, it still calls for more concrete analysis on the embedded pictures' effect on signaling the crowdfunding performance. More sophisticated techniques in image processing can be adopted to extract more features of pictures such as the resolution, quality of pictures in addition to the simple quantity of pictures. This can enable us to conduct more accurate and sensible analysis of pictures' effect on the performance of projects. It may also help us to explain why we obtained seemingly counterintuitive results of the effect of pictures in our experiment, by examining whether it is due to the complexity of embedded pictures or the fact that it really does not matter how many pictures are included in the profile. Lastly, our study implements the ad-hoc analysis by introducing one more category to enhance the validity of our explorative study. Yet, it still requires more convincing approaches to extend the results to other 12 project categories.

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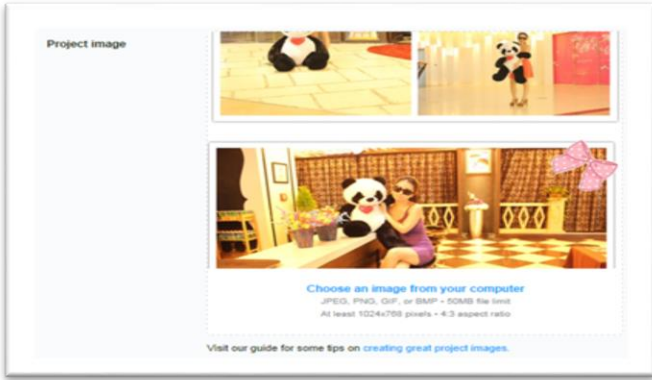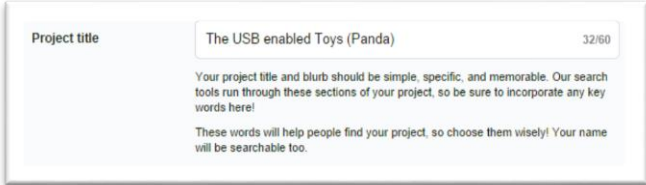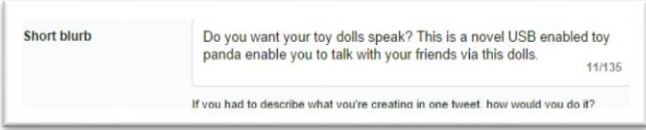
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Appendix

Appendix 1:

Kickstarter divide the required information into five categories, i.e.
Basics, Rewards, Story, About you, and Account. The following
screenshots are used to demonstrate these information categories.

Table A1: Required Blank for Creating Projects with Kickstarter

Required Information	Crawled
Project Image	✓
Project Title	✓
Short Blurb	-
Category and Subcategory	✓

Category Technology Subcategory (optional)	
Project Location	✓
Project location Singapore, Singapore ✕	
Funding Duration	✓
Funding duration ● Number of days 1–60 days, we recommend 30 or less 30 ○ End on date & time We recommend setting a funding duration of 30 days or less. Shorter durations tend to have higher success rates. Once your project has launched, it won't be possible to change your funding duration. For more tips, check out the Creator Handbook.	
Funding Goal	✓
Funding goal $10,000 USD Your funding goal should be the minimum amount needed to complete the project and fulfill (and ship!) all rewards. Because funding is all-or-nothing, you can always raise more than your goal but never less. Once your project has launched, it will not be possible to change your funding goal. If your project is successfully funded, the following fees will be collected from your funding total: Kickstarter's 5% fee, and payment processing fees (between 3% and 5%). If funding isn't successful, there are no fees. View fees breakdown	

Appendix 2

The correlation statistics of transformed factors (Shown in bold font).

Table A2: The Correlations between each Variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) $logR_i$	1.00														
(2) S_i	0.15	1.00													
(3) $logB_i$	**0.65**	0.24	1.00												
(4) D_i	-0.02	-0.09	-0.03	1.00											
(5) $i.Cat_i$	-0.09	0.12	-0.07	0.07	1.00										
(6) $logG_i$	0.17	-0.32	0.17	0.08	-0.37	1.00									
(7) FAQ_i	0.37	0.15	0.34	-0.06	-0.19	0.24	1.00								
(8) BP_i	0.05	0.22	0.09	0.00	0.15	-0.08	0.05	1.00							
(9) CP_i	-0.02	0.12	0.00	-0.04	0.17	-0.20	-0.03	0.28	1.00						
(10) FP_i	-0.04	-0.18	-0.07	0.01	0.09	-0.09	-0.06	0.01	**0.58**	1.00					

III

(11) V_i	0.07	0.06	0.07	-0.08	-0.16	0.21	0.15	0.03	-0.04	-0.08	1.00				
(12) P_i	0.10	0.04	0.13	-0.11	0.09	0.18	0.12	0.11	0.06	0.01	0.20	1.00			
(13) T_i	0.00	0.11	0.04	-0.03	0.18	-0.05	-0.03	0.17	0.16	0.08	0.01	0.08	1.00		
(14) VR_i	0.00	0.13	0.04	-0.04	0.17	-0.09	-0.01	0.28	**0.51**	0.25	0.02	0.10	0.13	1.00	
(15) $logCM_i$	0.47	0.49	0.63	-0.03	-0.11	0.21	0.39	0.17	0.03	-0.13	0.17	0.19	0.07	0.07	1.00