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Investigations of Reward-based Crowdfunding Success: A Marketing Perspective



Investigations of Reward-based Crowdfunding Success: A Marketing Perspective

Liang Zhao

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Investigations of Reward-based Crowdfunding Success: A Marketing Perspective

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aan de Universiteit van Amsterdam

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Liang Zhao

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Table of Contents

Chapter 1. Introduction.....	8
1.1 Research Background.....	8
1.2 Main Theoretical Themes.....	12
1.2.1 Cue Utilization Theory.....	12
1.2.2 Consumer Value Theory.....	14
1.2.3 Cognitive Evaluation Theory.....	15
1.3 Introduction to Chapters.....	16
Chapter 2. Love My Campaign and Love Me, Love My Campaign: Analyzing Reward-based Crowdfunding Success through Elaboration Likelihood Model.....	20
Abstract.....	20
2.1 Introduction.....	21
2.2 Background and Theory.....	23
2.2.1 Crowdfunding.....	23
2.2.2 The Consumer Perspective in Understanding Crowdfunding Success.....	24
2.2.3 Elaboration Likelihood Model (ELM).....	25
2.3 Research Model and Hypotheses.....	27
2.3.1 The Application of ELM in Understanding Reward-based Crowdfunding.....	27
2.3.2 The Central Route: Signals of Campaign Quality.....	28
2.3.3 The Peripheral Route: Entrepreneurs' Question-Answering Behavior.....	31
2.4 Data and Methodology.....	33
2.4.1 Measures.....	33
2.4.2 Estimation Method.....	35
2.5 Results.....	36

2.5.1 Robustness Tests	39
2.6 Conclusions and Implications.....	45
2.6.1 Theoretical Implication	45
2.6.2 Practical Implication	46
2.6.3 Limitations and Future Research	47
Chapter 3. Self-funding for Crowdfunding: The Effects of Entrepreneurs’ Impression Management on Crowdfunding Outcomes.....	50
Abstract.....	50
3.1 Introduction.....	51
3.2 Theory and Hypotheses	54
3.2.1 Signaling Theory and Crowdfunding.....	54
3.2.2 Impression Management	55
3.2.3 IM in the Crowdfunding Context.....	56
3.2.4 Influences of Entrepreneurs’ IM Tactics on Crowdfunding Outcomes	58
3.3 Data and Methodology	61
3.3.1 Data	61
3.3.2 Measures	63
3.3.3 Estimation Method.....	65
3.4 Results.....	69
3.5 Conclusions.....	73
3.5.1 Theoretical and Practical Implications.....	73
3.5.2 Limitations and Future Research	74
Chapter 4. Hedonic Value and Crowdfunding Campaign Performance: A Propensity Score Matching Analysis	77
Abstract.....	77
4.1 Introduction.....	78
4.2 Literature Review and Hypothesis.....	80

4.2.1 Reward-based Crowdfunding as Experience Goods Consumption	80
4.2.2 Hedonic Value and Utilitarian Value in Reward-based Crowdfunding	82
4.2.3 Lottery as a Hedonic Value Enhancement	85
4.3 Data and Methodology	86
4.3.1 Data	86
4.3.2 Estimation Methodology	89
4.4 Results.....	92
4.4.1 Results of Propensity Score Matching (PSM)	92
4.4.2 Empirical Results	100
4.5 Conclusions.....	101
4.5.1 Theoretical Implications	101
4.5.2 Practical Implications.....	103
4.5.3 Limitations and Future Research	103
Chapter 5. Do Not Teach Fish to Swim! - The Backfire Effect of Providing Rewards on Prosocial Crowdfunding Campaign Performance	106
Abstract.....	106
5.1 Introduction.....	107
5.2 Literature Review and Hypotheses.....	109
5.2.1 Supporting Social Entrepreneurship (SE) Through Crowdfunding	109
5.2.2 Perceived Free-rider Problem in the Prosocial Context..	110
5.2.3 Contributors' Motivations in Supporting Prosocial Crowdfunding Campaigns	112
5.2.4 The Effects of Extrinsic Motivations on Support for Prosocial Activities	113
5.3 Data and Variables.....	116
5.3.1 Data	116

5.3.2 Variables	117
5.4 Models and Methodology	120
5.4.1 Models.....	121
5.4.2 Methodology	121
5.5 Results.....	128
5.6 Conclusions.....	133
5.6.1 Theoretical Implications	133
5.6.2 Practical Implications.....	134
5.6.3 Limitations and Future Research	135
Chapter 6. Discussion.....	137
6.1 Theoretical Implications	137
6.2 Practical Implications	141
6.3 Limitations and Future Research	142
Bibliography	145
Nederlandse Samenvatting.....	171
Acknowledgements	173
About the Author.....	174

List of Tables and Figures

Table 2.1 Descriptive Statistics	37
Table 2.2 Correlation Matrix.....	40
Table 2.3 The Effects of Central Route Persuasion on Crowdfunding Success.....	42
Table 2.4 The Effects of Peripheral Route Persuasion on Crowdfunding Success.....	43
Table 2.5 Robustness Checks: The Effects of Central and Peripheral Route Persuasion on Average Funding Amount	44
Table 3.1 Descriptive Statistics	63
Table 3.2 Matching Variables Identification and Matching Effectiveness Check	67
Table 3.3 Correlation Matrix (Matched Sample)	68
Table 3.4 The Effects of Self-investing Strength on Campaign Success and Campaign Performance.....	72
Table 3.5 Robustness Check: The Effects of Average Self-investing on Campaign Performance	73
Table 4.1 Definitions of Variables	88
Table 4.2 Descriptive Statistics (All Sample)	89
Table 4.3 Results of Balancing Assumption	94
Table 4.4 The Variances of Control Group and Treatment Group Before and After Matching.....	95
Table 4.5 Descriptive Statistics (Matched Sample)	97
Table 4.6 Correlation Matrix.....	98
Table 4.7 Regression Results	102
Table 5.1 Definitions of Variables	119
Table 5.2 Descriptive Statistics (All Sample)	120
Table 5.3 Logit Regression Results.....	123
Table 5.4 Descriptive Statistics (Matched sample).....	124

Table 5.5 Correlation Matrix.....	125
Table 5.6 Results of Balancing Assumption	127
Table 5.7 The Variance of Control Group and Treatment Group Before and After Matching.....	128
Table 5.8 The Effect of Tangible Rewards on Prosocial Campaign Outcomes.....	129
Table 5.9 The Effects of Tangible Reward Number on Prosocial Campaign Performance	131
Table 5.10 Robustness Check	132
Figure 2.1 Research Framework	29
Figure 4.1 Probability Density Curves of the Propensity Score in Treatment Group and Comparison Group.....	96

Chapter 1. Introduction

1.1 Research Background

Access to financial sources is critical to the survival of new ventures. For entrepreneurs, finding financial sources is the most important and challenging task in creating new ventures (King and Levine, 1993). Traditionally, financial constraints can be solved through both internal and external channels. However, entrepreneurs may face difficulties in obtaining sufficient financial sources through traditional channels. Internally, entrepreneurs' own money and capital from friends and families provide possible solutions to finance constraints. However, these constraints cannot be solved entirely through these internal channels because internal sources are always insufficient for turning business ideas into reality (Tomczak and Brem, 2013). Therefore, entrepreneurs must find external financial sources. However, new ventures face difficulties in satisfying their financial needs through traditional external financial sources such as venture capital, angel investment and bank loans (Voorbraak et al., 2011) because of the "liability of newness" of the start-ups (Stinchcombe, 1965). Specifically, bank loans require collateral, but new ventures do not always have valuable assets to offer as collateral when applying for loans. Banks also must estimate the repayment rate based on borrowers' historic information, but start-ups lack such information (Schwienbacher and Larralde, 2010). In addition, venture capitalists and business angels are hesitant to invest in ventures in the early stages based on their uncertain future (Tomczak and Brem, 2013).

Recently, crowdfunding has emerged as an innovative tool for start-up financing in addition to traditional fundraising sources. This tool enables entrepreneurs to collect small amounts of funding from a large number of public individuals (Mollick, 2014). Generally, crowdfunding can be defined as the efforts that are paid by entrepreneurial individuals or groups to finance their ventures by collecting small contributions from a large number of individuals through online platforms (Mollick, 2014). Crowdfunding can be divided into four sub-categories based on the different reward type: reward-based crowdfunding, loan-based

crowdfunding, equity-based crowdfunding and donation-based crowdfunding. Through online crowdfunding platforms, individuals provide financial sources to new ventures in exchange for non-monetary rewards, interest, stock profits and psychological rewards (Belleflamme et al., 2014). Reward-based crowdfunding is the most popular crowdfunding model (Mollick, 2014). This model not only offers adequate capital for entrepreneurs to start ventures but also broadcasts the ventures to the future potential financial sources through its marketing attribute. In addition, in this model, the ownership of ventures is always held by the entrepreneurs. The reward-based crowdfunding model has been chosen as the research context of this thesis.

In the reward-based crowdfunding context, the success of a campaign can be defined as whether the total amount of money collected during the crowdfunding period is equal or higher than the initial crowdfunding target (Mollick, 2014). For most reward-based crowdfunding platforms, campaign success determines the entrepreneurs' claim of the financial sources. Although every start-up initiator wants to see a crowdfunding campaign successfully funded, unfortunately, not every campaign can succeed. In reality, many campaigns fail to collect sufficient funding. Therefore, the success of crowdfunding campaigns is important for entrepreneurs. In academic research, reward-based crowdfunding has become a popular and meaningful topic. As an interactive fundraising tool, crowdfunding success is naturally influenced by numerous factors from different perspectives. Previous researchers have examined the success of reward-based crowdfunding using different theories. In prior studies, the signaling theory (Spence, 1973), the theory of social capital (Nahapiet and Ghoshal, 2000), the commodity theory (Brock, 1968), the social exchange theory (Cropanzano and Mitchell, 2005), the theory of consumption (Sheth et al., 1991), the word-of-mouth theory (Dichter, 1966), the theory of herding behavior (Baddeley, 2010) and the theory of peer effects (Sacerdote, 2001) were used as theoretical lens to study reward-based crowdfunding success. Based on these theoretical themes, different factors such as campaigns' quality signals (e.g., Mollick, 2014), number of entrepreneurs' Facebook friends (e.g., Ward and Ramachandran, 2010)

and entrepreneurs' past crowdfunding experience (e.g., Zvilichovsky et al., 2015) were found to be significantly associated with reward-based crowdfunding success. These meaningful findings expand the understanding of reward-based crowdfunding success.

Although previous studies offer valuable insights regarding the success of reward-based crowdfunding campaigns, existing knowledge on the topic remains incomplete. Campaign quality information that is prepared *ex-ante* and remains unchanged during the crowdfunding process is proved to be significantly associated with reward-based crowdfunding success. However, in addition to direct campaign-related information in the *ex-ante* phase, indirect information that can be used to infer campaign quality during the crowdfunding phase may also influence crowdfunding outcomes (Beaulieu et al., 2015). In addition to utilitarian motivations, hedonic motivations may also influence consumer behavior (Hirschman and Holbrook, 1982). However, in the reward-based crowdfunding context, the influence of hedonic motivations on contributors' behavior is still unclear. To understand reward-based crowdfunding success comprehensively, this thesis aims to fill these research gaps.

Compared with the Western-oriented crowdfunding research, the studies based on the Chinese context is relatively rare. To enrich crowdfunding literature, in this thesis, the above research gaps are mitigated in the Chinese context through the "Theoretical Universalism" (Alon et al., 2011; Barney and Zhang, 2009; Whetten, 2009). "Theoretical Universalism" suggests that theories are universal in different contexts and can be applied to various settings to generate context-specific insights (Alon et al., 2009). These context-specific insights provide ground to test, refine and generalize the existing theoretical lenses which are developed elsewhere (Barney and Zhang, 2009). According to "Theoretical Universalism", Chinese crowdfunding phenomenon can be examined from existing theoretical lenses (Whetten, 2009). In this thesis, cue utilization theory, consumer value theory and cognitive evaluation theory are chosen as the existing theoretical lenses to investigate crowdfunding practice in the Chinese context.

Specifically, Belleflamme et al. (2014) note that reward-based crowdfunding is similar to product pre-selling and that the contributors to reward-based crowdfunding should be treated as consumers instead of investors. Thus, the consumer perspective may offer a useful theoretical foundation to study the success of reward-based crowdfunding (Priem, 2007). Contributions are directly associated with crowdfunding outcomes. Therefore, for crowdfunding success, it is important to understand what triggers these contributions. To answer this question, two motivation dimensions are discussed in this thesis: utilitarian motivation and hedonic motivation (Hirschman and Holbrook, 1982). Specifically, reward-based crowdfunding contributors need not only the utilitarian value of the pre-selling products but also the pleasure obtained during the crowdfunding process (Dhar and Wertenbroch, 2000). Therefore, the satisfaction of contributors' utilitarian motivation and hedonic motivation should be associated with crowdfunding success. Based on this viewpoint, I examine entrepreneurs' empathy (Chapter 2) and impression management (Chapter 3), which help associate contributors' utilitarian motivations with reward-based crowdfunding success. Similarly, in terms of hedonic value satisfaction, a crowdfunding campaign's entertaining feature (Chapter 4) also triggers campaign success. By studying contributors' motivations for supporting prosocial crowdfunding campaigns, this thesis also explores why the satisfaction of contributors' extrinsic motivation may not always lead to crowdfunding success (Chapter 5). Empirical analyses based on a unique dataset from the largest reward-based crowdfunding platform in China are used to address my research intentions. The findings of this thesis not only provide meaningful insights into the literature on crowdfunding success but also offer practical tips for both crowdfunding entrepreneurs and crowdfunding platform administrators to satisfy their needs.

The remainder of this thesis is presented as follows. First, an overview of the main theoretical themes and a brief introduction of the remaining chapters will be provided in this chapter. Next, four empirical studies based on the theoretical themes will be presented in Chapters 2, 3, 4 and

5. Last, the theoretical and practical implementations of the thesis are discussed in the final chapter.

1.2 Main Theoretical Themes

Many theoretical streams can be applied to examine the main research question of this thesis. Specifically, cue utilization theory, consumer value theory and cognitive evaluation theory are chosen as the main theoretical themes of this thesis. These theoretical themes are important for understanding individual behavior. Thus, they offer feasible knowledge for studying reward-based crowdfunding success from the consumer perspective.

1.2.1 Cue Utilization Theory

Cue utilization theory has been used to explore consumers' perceptions of product quality in marketing research (Olson, 1978; Rao and Monroe, 1989; Szybillo and Jacoby, 1974). According to this theory, product quality is presented by an array of product cues (Olson 1976). To evaluate product quality, consumers examine product cues through predictive value (PV) and confidence value (CV) dimensions (Dick, Chakravarti, and Biehal 1990). The PV dimension is defined as the influence of a certain cue on a product's quality in a consumer's opinion. The CV dimension describes a consumer's confidence in his/her ability to use a certain cue correctly (Olson 1978; Cox 1967). A cue with high CV and PV leads to a successful product evaluation (Olson, 1978).

Product cues can be further classified into extrinsic cues and intrinsic cues (Olson, 1976). Extrinsic cues describe the external characteristics of a product (Olson, 1978). These cues are not part of the product and can be changed easily. Specifically, information such as price (Leavitt, 1954), packaging (McDaniel and Baker, 1977), brand (Allison and Uhl, 1964), store name (Wheatley, Chiu and Goldman, 1981) and color (Peterson, 1977) are used by consumers as extrinsic cues to evaluate product quality. Conversely, intrinsic cues present the key attributes of a product. These cues are parts of a product and cannot be changed without changing the

product's physical properties. Product ingredients are an example of intrinsic cues (Olson, 1978; Olson and Jacoby, 1972).

Previous marketing studies have found that consumers use both intrinsic and extrinsic cues for product quality evaluation (Jacoby, Olson and Haddock, 1971; Szybillo and Jacoby, 1974; Simonson 1989). The relative importance of intrinsic and extrinsic cues is determined by their PV and CV (Olson 1978). Generally, intrinsic cues are symbolized by high PV but low CV because intrinsic cues, as products' basic properties, are more important to estimate a product's real quality than extrinsic cues. Conversely, extrinsic cues are characterized by low PV but high CV. Consumers tend to rely more on high CV, low PV cues (extrinsic cues) than on high PV, low CV cues (intrinsic cues) when evaluating product quality. Compared to intrinsic cues, extrinsic cues offer consumers more confidence and certainty about product quality (Schellinck, 1980; Cox, 1967).

In the crowdfunding context, a campaign's extrinsic cues can be defined as information that relates to the campaign but is not part of the campaign, such as entrepreneurs' internal social capital (Colombo et al., 2015) and external social capital (Agrawal et al., 2015). Conversely, intrinsic cues represent a campaign's basic properties that cannot be changed during the crowdfunding process, such as campaign description, video and pictures (Mollick, 2014). Previous studies in reward-based crowdfunding have explored the influences of campaigns' intrinsic cues and extrinsic cues on crowdfunding success (e.g., Mollick, 2014; Colombo et al., 2015). With regard to extrinsic cues, previous studies have only focused on extrinsic cues in the *ex-ante* phase of crowdfunding. However, the influences of extrinsic cues in the funding phase have not been investigated. Chapters 2 and 3 of this thesis aim to mitigate this research gap. The influences on crowdfunding success of entrepreneurs' question-answering behavior (Chapter 2) and self-funding behavior (Chapter 3), two examples of extrinsic cues during the crowdfunding phase, are examined.

1.2.2 Consumer Value Theory

Consumer value is an important concept for understanding consumer behavior because consumers' purchasing behavior is generally triggered by the satisfaction of values (Albrecht, 1992). Thus, consumer value satisfaction is closely related to successful exchange transactions (Holbrook, 1994). In marketing studies, consumer value is generally divided into utilitarian value and hedonic value (Babin et al., 1994).

Utilitarian value can be defined as a consumer's overall evaluation of his/her purchasing behavior's benefits and sacrifices. It is mission-based, rational and goal-oriented (Babin et al., 1994; Engel et al., 1995; Batra and Ahtola, 1991; Tauber, 1972; Hirschman and Holbrook, 1982). In this point of view, a consumer's purchasing behavior is driven by a mission and a consumer's utilitarian value can be achieved by completing the mission or completing the mission effectively (Babin et al., 1994). Product stands in the center of utilitarian value as it is the medium for obtaining utilitarian value (Carothers and Adams, 1991). Therefore, product quality information is crucial for consumer purchasing behavior because such information influences utilitarian value satisfaction directly (Hoffman and Novak, 1996). For instance, studies in marketing find that product quality information is significantly associated with customer satisfaction (Andreassen and Lindenstad, 1998; Cronin et al., 2000; Fornell et al., 1996) and purchase intention (Dodds et al., 1991; Sweeney et al., 1999). In addition to task completion, consumers may also be motivated by obtaining hedonic value such as happiness, fantasy, awakening, sensuality, and enjoyment (Babin et al., 1994). Converse to utilitarian value, hedonic value is experiential and emotional. It refers to a consumer's overall evaluation of the experiential benefits (e.g., entertainment) during the entire purchasing process (Hirschman and Holbrook, 1982). Based on the hedonic value perspective, shopping is no longer a process of mission completion. Shopping should be entertaining, arousal increasing, involvement heightening, freedom providing and fantasy fulfilling (Babin et al., 1994). In addition to obtaining physical products, consumers also shop for enjoyment through the shopping process (Bloch and Bruce, 1984). Prior marketing studies indicate that hedonic value, an extension of

utilitarian value, is an important factor in online sales promotion (Burke, 2002).

Similarly, in the reward-based crowdfunding context, it is reasonable to expect that the satisfaction of both utilitarian value and hedonic value will lead to crowdfunding success. Based on signaling theory, previous studies investigated reward-based crowdfunding success through the utilitarian value perspective, finding that campaign quality is positively associated with campaign success (e.g., Mollick, 2014). However, few studies have explored reward-based crowdfunding success from the hedonic value perspective. Chapter 4 of this thesis is one of few studies to explore the relationship between hedonic value fulfillment and crowdfunding success.

1.2.3 Cognitive Evaluation Theory

Motivation, which directs and stimulates human behavior, can be categorized into extrinsic motivation and intrinsic motivation (Murray, 1964; Deci, 1976). Specifically, an action is considered to be driven by intrinsic motivation if the action itself is interesting, enjoyable, and satisfying. Conversely, an action tends to be driven by extrinsic motivation if it is instrumental to some separable consequence (Deci and Ryan, 2000). Both of these motivations influence individual behavior (e.g., Davis et al., 1992; Kim et al., 2007; Lin and Bhattacharjee, 2008). In the reward-based crowdfunding context, contributors are motivated by collecting rewards, helping others, supporting causes and being parts of a community (Gerber and Hui, 2013). For example, commercial campaign contributors are considered to be mainly driven by extrinsic motivation because they contribute to collect rewards (Allison et al., 2015).

In addition to supporting commercial campaigns, the crowdfunding mode may also be used to support prosocial purposes. Specifically, existing literature suggests that donation-based crowdfunding is a suitable mode for supporting prosocial campaigns (Lehner, 2013). In addition to the donation-based mode, the reward-based mode may also support prosocial purposes because it may solve the perceived “free-rider” problem (Samuelson, 1954) of the private provision of public goods by providing contributors with external rewards (Friedman and McAdam, 1992).

However, few studies have investigated whether the reward-based mode can be used for supporting prosocial purposes. Based on the cognitive evaluation theory (Deci and Ryan, 1985), I address this important yet unclear issue in Chapter 5 of this thesis.

In the crowdfunding context, altruism, guilt and empathy tend to motivate individuals to support prosocial campaigns intrinsically (Ordanini et al., 2011). Following the cognitive evaluation theory (Deci and Ryan, 1985), extrinsic and intrinsic motivations may be incompatible. Previous literature has shown that providing extrinsic motivations may crowd out individual intentions to conduct intrinsically motivated activities (e.g., Deci and Ryan, 1985; Benabou and Tirole, 2003; Titmuss, 1971; Frey, 1997; Lepper and Greene, 2015). Similarly, providing rewards as extrinsic motivations to prosocial campaigns may hinder supporters' intrinsic motivations to contribute. Specifically, providing extrinsic rewards undermines individuals' intrinsic motivations to support prosocial campaigns by offering too many choices (justifications) to perform this activity (Lepper, Greene and Nisbett, 1973). In addition, providing extrinsic rewards may diminish prosocial campaign supporters' autonomy by adding extra controlling (Deci and Ryan, 1985). As a result, the potential supporters of prosocial campaigns will feel less likely to donate if they notice that extrinsic rewards have been provided as perceived rewards of support. Therefore, compared to donation-based crowdfunding, reward-based crowdfunding may not be a suitable mode for supporting prosocial purposes.

1.3 Introduction to Chapters

The main body of this thesis consists of a collection of four empirical paper presented in four chapters. These four chapters illuminate my research intentions. Specifically, the relationship between contributors' utilitarian motivation satisfaction and reward-based crowdfunding success is discussed in Chapters 2 and 3. The findings highlight the positive influences of entrepreneurs' empathetic behavior and impression management on reward-based crowdfunding outcomes. Chapter 4 investigates whether hedonic value-enhancing treatment in the form of

lottery contributes to crowdfunding success. Finally, Chapter 5 uses social entrepreneurship as an example to examine why satisfying contributors' extrinsic motivations may not always lead to crowdfunding success.

Chapter 2 is based on an empirical study that attempts to enhance the understanding of reward-based crowdfunding success through the elaboration likelihood model (ELM) (Petty and Cacioppo, 1984). In addition to campaigns' quality signals, I am interested in whether and how peripheral cues influence crowdfunding success in the form of entrepreneurs' specific behavior during the crowdfunding phase. Based on signaling theory (Spencer, 1973), prior research proposed a positive relationship between campaigns' quality signals and crowdfunding success (e.g., Mollick, 2014). However, the effects of peripheral cues on campaign success remain unclear in the reward-based crowdfunding context. In this study, entrepreneur empathy is used as an example of peripheral cues. Empathy describes the phenomenon in which an individual feels that others can feel and understand his/her situation (Plank and Reid, 2010). Specifically, in the reward-based crowdfunding context, entrepreneurs answering question behavior can be treated as a type of empathetic action. The empirical results of this research suggest that in addition to campaigns' quality signals, a peripheral cue in the form of entrepreneurs' empathetic action is also associated with reward-based crowdfunding success.

Based on an empirical approach, Chapter 3 explores the relationship between entrepreneurs' impression management (IM) and reward-based crowdfunding success. Goffman (2002) defined IM as individuals' specific behavior designed to achieve rewards or desirable outcomes from others by influencing others' perceptions. IM has been treated as a useful tool to enhance business legitimacy and to facilitate entrepreneurial resource acquisition (Rao, 1994; Aldrich and Fiol, 1994; Gardner and Avolio, 1998; Lounsbury and Glynn, 2001). Based on its definition, entrepreneurs' IM might be applicable in facilitating crowdfunding success. However, whether and how entrepreneurs' IM influences crowdfunding success remains unclear. To mitigate this gap, this study

explores the effects of entrepreneurs' IM tactics in the form of self-funding on reward-based crowdfunding success. Analyzing a unique dataset from the largest reward-based crowdfunding platform in China, I found that entrepreneurs' self-funding behavior as an IM tactic not only positively associates with crowdfunding success but also enhances crowdfunding performance.

Chapter 4 provides insights into how contributors' hedonic value enhancement influences reward-based campaign success. In marketing literature, consumer purchasing behavior is driven by both utilitarian value and hedonic value (To et al., 2007). According to Belleflamme et al. (2014), reward-based crowdfunding is equal to online pre-selling, and the contributors of reward-based crowdfunding are similar to consumers. Therefore, crowdfunding contributors' behavior should be determined by both utilitarian value and hedonic value. However, the majority of previous studies investigating reward-based crowdfunding success were based on the enhancement of contributors' utilitarian value. Based on this perspective, campaigns' quality signals are associated with crowdfunding success (e.g., Mollick, 2014). However, the relationship between contributors' hedonic value enhancement and crowdfunding success has been given little attention in prior crowdfunding literature. This study examines how the hedonic value-enhancing factor in the form of lottery influences reward-based crowdfunding success. The empirical results suggest that the adoption of hedonic value-enhancing treatments is positively related to crowdfunding performance. Moreover, it also improves the popularity of crowdfunding campaigns.

In addition to supporting commercial campaigns, crowdfunding also can fund prosocial activities in the donation-based form (Lehner, 2013). However, as a practice of the private provision of public goods, donation-based crowdfunding may suffer from the "free-rider" problem (Samuelson, 1954). In this case, the provision of public goods through donation-based crowdfunding will be hindered. According to Friedman and McAdam (1992), the "free-rider" problem in a charitable giving environment can be solved by offering extrinsic rewards to donors. However, in the

crowdfunding context, the question of whether offering extrinsic rewards to contributors can be used to enhance the performance of prosocial crowdfunding campaigns is still theoretically ambiguous and empirically unsettled. To mitigate this gap, Chapter 5 examines the reasons why a reward-based approach may not be an appropriate crowdfunding model for financing prosocial purposes. Based on the cognitive evaluation theory (Deci and Ryan, 1985), the introduction of extrinsic motivation may crowd out an individual's intrinsic motivation (Greene and Lepper, 1974). Because donating in prosocial crowdfunding campaigns is mainly driven by intrinsic motivations, offering extrinsic rewards to intrinsically motivated donors will hinder their donating behavior.

Chapter 6 discusses the main findings of Chapters 2, 3, 4 and 5. In addition, this chapter examines the main implementations from both theoretical and practical perspectives. Finally, potential limitations and future research avenues are presented.

Chapter 2. Love My Campaign and Love Me, Love My Campaign: Analyzing Reward-based Crowdfunding Success through Elaboration Likelihood Model

Abstract

This paper draws on the resource-based view (RBV) and the consumer perspective to study reward-based crowdfunding success. Based on the elaboration likelihood model (ELM), both issue-relevant information (campaigns' quality signals) and peripheral cues (entrepreneurs' empathetic actions) should be associated with reward-based crowdfunding outcomes. A unique dataset collected from the largest reward-based crowdfunding platform in China is used to test the hypotheses. The empirical results indicate that both the central route persuasion and the peripheral route persuasion have positive influences on reward-based crowdfunding success. Theoretical and practical implications are discussed together with limitations and future research directions.

*A previous version of this chapter was submitted to *International Small Business Journal*, which is currently under review.

2.1 Introduction

Crowdfunding is an innovative channel for entrepreneurial fundraising. The increasing popularity of crowdfunding has stimulated research regarding this new entrepreneurial fundraising instrument (e.g., Belleflamme et al., 2014; Ordanini et al., 2011; Agrawal et al., 2014; Mollick, 2014). In the previous literature, the success factors of crowdfunding have become the major research question for crowdfunding researchers (Drover et al., 2017). For example, studies have explored the success determinants of reward-based crowdfunding through the resource-based view (RBV) (Wernerfelt, 1984; Barney, 1991; Eisenhardt and Martin, 2000; Lockett et al., 2009). Based on the RBV, crowdfunding success is prompted by the competitive advantage generated by entrepreneurs' inborn superior heterogeneous resources. Campaigns' web pitch quality (Mollick, 2014), campaigns' social networking (Lu et al., 2014), entrepreneurs' internal social capital (Colombo et al., 2015), and entrepreneurs' external social capital (Agrawal et al., 2015) are reported to be positively associated with reward-based crowdfunding success.

Quality signals generated from internal heterogeneous resources offer information for potential contributors to evaluate campaign quality in a high information asymmetry environment. However, such campaign-related quality signals may not be trustworthy due to the single source of information (Burtch et al., 2014). As the campaign-related signals are created and distributed by entrepreneurs, they may overstate their campaigns' advantages and understate the disadvantages for attracting contributors in an information asymmetry environment (Mavlanova et al., 2012). Therefore, contributors require extra information from alternative sources to make comprehensive campaign evaluations (Krishnan and Hartline, 2001). In other words, in addition to campaign-related quality signals, information from alternative sources may also be associated with crowdfunding success. In terms of reward-based crowdfunding, contributors are treated as consumers instead of investors because of the "pre-selling" nature of reward-based crowdfunding (Belleflamme et al., 2014). The consumer perspective (Priem, 2007), a new approach for entrepreneurship research, may offer another suitable angle to explore the

success of reward-based crowdfunding. Converse to RBV, the consumer perspective highlights consumers instead of internal resources as the source of success. According to the consumer perspective, business success can also be achieved by satisfying consumers' needs (Ye et al., 2012). Therefore, entrepreneurs' empathetic actions with regard to satisfying contributors' needs might be the alternative source of information that leads to reward-based crowdfunding success.

Despite the growing research exploring the success of reward-based crowdfunding through the RBV, relatively little research addresses this question from the consumer perspective. In addition to campaigns' quality signals, the question of whether entrepreneurs' empathetic actions matter to reward-based crowdfunding success remains unclear. This paper aims to bridge this gap under the framework of the elaboration likelihood model (ELM) (Petty and Cacioppo, 1986). Based on the ELM framework, campaigns' quality signals are treated as issue-relevant information and entrepreneurs' empathetic actions are treated as peripheral cues. In other words, campaigns' quality signals are treated as the central routes of persuasion; entrepreneurs' empathetic actions are treated as the peripheral routes of persuasion. In particular, entrepreneurs' question-answering actions during the fundraising process are used as the proxy of entrepreneurs' empathetic actions. Based on this framework, the way in which entrepreneurs' empathetic actions and campaigns' quality signals affect reward-based crowdfunding outcomes is examined. Analyzing data from the largest reward-based crowdfunding platform in China, the empirical results show that campaigns' quality signals and entrepreneurs' empathetic actions both lead to reward-based crowdfunding success.

The paper is organized as follows. First, the research background and theoretical foundations are presented. Next, the research hypotheses are developed based on the theoretical embedding. Then, the research data and methodology are introduced. In the next section, the empirical results are discussed in detail. Finally, the paper concludes with theoretical implications, practical implications, limitations and avenues for future research.

2.2 Background and Theory

2.2.1 Crowdfunding

Crowdfunding can be defined as “an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes” (Lambert and Schwienbacher, 2010). In entrepreneurial contexts, Mollick (2014) defines crowdfunding as “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.” Crowdfunding platforms, entrepreneurs and backers are three main players in the crowdfunding eco-system (Schwienbacher and Larralde, 2010). Reward-based, donation-based, equity-based and loan-based are four business models of crowdfunding (Hemer, 2011). Among them, reward-based is the most popular model with high penetration and market share (Massolution, 2015). Backers are treated as the most important players in different crowdfunding models because backer action is directly associated with crowdfunding campaign success (Mollick, 2014). Based on different crowdfunding models, backers have different identities. For example, they can be donors in donation-based crowdfunding, investors in equity-based crowdfunding and lenders in loan-based crowdfunding (Schwienbacher and Larralde, 2010).

As research on crowdfunding increases, previous studies have addressed the following three aspects: reward-based business model (e.g., Belleflamme et al., 2014; Mollick, 2014; Bruton et al., 2015), participants’ motivations (e.g., Gerber et al., 2012; Cholakova and Clarysse, 2015) and success factors of crowdfunding campaigns (e.g., Mollick, 2014). Among the three aspects, the success factors of crowdfunding campaigns have become the main research question for crowdfunding researchers (Drover et al., 2017). In particular, Mollick (2014) proposed that a campaign’s quality signals, including the proposed offering video clip, picture gallery and detailed campaign description, are positively associated with

campaign success. Ahlers et al. (2015) explored the relationship between an entrepreneur's human capital and crowdfunding campaign success. In addition, campaign success is also associated with geographical factors (Mollick, 2014), entrepreneur social capital (Colombo et al., 2015), campaign goal-setting (Kuppuswamy and Bayus, 2017), campaign creativity and entrepreneurial passion (Davis et al., 2017), campaign orientation (Calic and Mosakowski, 2016), contributor access to information (Burtch et al., 2014) and certification effects (Drover et al., 2017).

2.2.2 The Consumer Perspective in Understanding Crowdfunding Success

A resource-based view (RBV) has dominated entrepreneurship research for decades (Wernerfelt, 1984; Barney, 1991; Eisenhardt and Martin, 2000; Lockett et al., 2009). This view suggests that firms should treasure and use their inborn superior heterogeneous resources as a competitive advantage when competing with their rivals in the market. RBV takes an upstream perspective by focusing on and mapping resource-based factors on firm performance to capture value (Priem, 2007; Priem et al., 2012). Previous studies on crowdfunding success were conducted by following the resource-based view. For instance, crowdfunding success was associated with campaign-related quality signals (e.g., Lambert and Schwenbacher, 2010; Agrawal et al, 2014; Mollick, 2014). These quality signals are derived from entrepreneurs' internal heterogeneous resources.

The consumer perspective as a new demand-side approach for exploring business success has emerged in entrepreneurship studies (Priem, 2007; Priem et al., 2012). Unlike RBV, the consumer perspective places consumers at the center, rather than internal resources. This consumer-oriented view focuses on value creation rather than value capture. Firms' value generation depends on the value creation process through consumer-entrepreneur interaction (Priem et al., 2012). In terms of demand-side perspective, a firm's competitive advantage is not necessarily generated by exploiting internal superior resources. Everyday resources can also be used as incubators for creating a competitive advantage if they focus on

satisfying consumers' heterogeneous needs (Ye et al., 2012), and these heterogeneous needs can be satisfied through entrepreneurs' empathetic actions. This approach advocates that entrepreneurs should manage their interactions with consumers to create value by translating consumers' knowledge into firm directions, business ideas and commercial opportunities (Fischer and Reuber, 2004; Reuber and Fischer, 2005; Yli-Renko and Janakiraman, 2008; Priem et al., 2012). In terms of context, the consumer perspective suits reward-based crowdfunding well (Chan and Parhankangas, 2017). In particular, reward-based crowdfunding allows entrepreneurs to satisfy their needs for financial resources from the public through online platforms by offering certain non-financial rewards in exchange (Davis et al., 2017). According to its definition, reward-based crowdfunding views backers more like consumers in "pre-selling" contexts instead of investors in investing contexts (Belleflamme et al., 2014; Mollick, 2014; Colombo et al., 2015; Cholakova and Clarysse, 2015). In addition, entrepreneur-consumer interactions are possible via crowdfunding platforms.

2.2.3 Elaboration Likelihood Model (ELM)

The elaboration likelihood model (ELM) was developed by Petty and Cacioppo (1984) to describe how attitudes form and change. ELM has been applied as a theoretical foundation in various studies related to information processing, such as advertising (Petty et al., 1983; Sengupta et al., 1997; Rollins and Bhutada, 2014), e-commerce (Gregg and Walczak, 2008; Kim and Benbasat, 2010), and marketing (Eckert and Goldsby, 1997). In general, ELM states that a person's overall evaluation of a given target will be influenced by two persuasive communication routes: the central route and the peripheral route (Petty and Cacioppo, 1984; Petty et al., 2005; Petty and Brinol, 2008).

In terms of the central route, one's evaluation of a given target is caused by carefully scrutinizing the merit information of the target (Petty et al., 1983). An appropriate description of the central route process can be described as "I agree with the message because I have carefully considered its related content" (Eckert and Goldsby, 1997). The target's merit

information is also called issue-relevant information (Darley and Smith, 1993; Crano and Prislin, 2006). It includes evidence regarding product superiority (Petty et al., 1983), product costs and benefits (Areni, 2003), and product quality (Darley and Smith, 1993). For the peripheral route, one's evaluation of a given target is associated with the peripheral cues of the target (Petty et al., 1983). Unlike the central route, the information used to evaluate a target under the peripheral route is not directly associated with the physical characteristics of the target. The indirect information is used as a cue to infer the credibility and attractiveness of the target. An example description of peripheral route persuasion is "I agree with the message because it was communicated by a well-known person" (Eckert and Goldsby, 1997). For instance, a product's quality can be indirectly evaluated from the language and the music used in its advertisement (Lord et al., 1995; Yang et al., 2006).

An individual's level of motivation and ability determine one's likelihood of elaboration. Motivation refers to the personal relevance or importance of a given target and ability refers to one's expertise or experience with the given target (Bhattacharjee and Sanford, 2006). For example, individuals tend to follow the central route to evaluate targets if their motivation and ability towards a given target are high. If individuals' motivation and ability are low, their evaluation towards a given target tends to depend on the peripheral route (Petty and Cacioppo, 1986).

Neither the central route nor the peripheral route alone can change one's attitude toward a given target. Both routes will present and affect individuals' evaluation process (Petty and Cacioppo, 1984). In addition, these two routes are not substitutes. For example, evaluations via the central route will be dominant if an individual has high levels of ability and motivation toward one given target (Petty and Cacioppo, 1986). However, the dominance of the central route will not eliminate the peripheral route. It will only decrease the impact of the peripheral route on making an evaluation (Petty and Wegener, 1998). Moreover, different route dependences do not mean different outcomes. For instance, two individuals may generate the same attitude toward a given target although

they are mainly influenced by different routes (Bhattacharjee and Sanford, 2006). Based on existing knowledge and past experiences (Ratneshwar and Chaiken, 1991), two individuals may generate different attitudes toward a given target despite being influenced by the same route (Tihanyi et al., 2003).

2.3 Research Model and Hypotheses

2.3.1 The Application of ELM in Understanding Reward-based Crowdfunding

ELM has been applied to various studies of Internet-based commercial activities (e.g., Gregg and Walczak, 2008). It has the ability to explain how potential consumers could be persuaded to form purchasing intentions in Internet-based contexts (Richard et al., 2010). As an online business model, reward-based crowdfunding allows entrepreneurs to persuade potential backers to provide financial resources by purchasing “pre-ordering” products through online platforms. In this case, ELM can be suitable for studying reward-based crowdfunding phenomena. Reward-based crowdfunding is not an investing concept but rather an online “pre-selling” business model (Belleflamme et al., 2014; Mollick, 2014; Colombo et al., 2015; Cholakova and Clarysse, 2015). According to ELM, a backer’s contributing intention will be influenced by both the central route and the peripheral route. A reward-based crowdfunding campaign can be seen as a given target for potential backers. Generally, a backer’s contributing intention can be influenced through two routes: the central route and the peripheral route. In particular, persuasion through the central route, a cognitive process, is generated by evaluating campaign-based merit information such as the quality signals of a campaign (Mollick, 2014). From the backer’s perspective, such quality signals decrease the information asymmetry level of crowdfunding by offering additional information about the campaigns. Therefore, campaigns’ quality signals tend to be positively related to campaign success. Persuasion through the peripheral route, an affective process, is generated by inferring the campaign’s attractiveness and credibility based on the presence of cues (Petty and Cacioppo, 1986). On the basis of ELM, a potential backer’s persuasion route is determined by his/her ability and motivation toward a

crowdfunding campaign. However, compared to motivational factors, backers' ability-related factors are less applicable for generating one's elaboration likelihood because of the novelty of crowdfunding products and the "ignorance" of backers (Davis et al., 2017). In terms of reward-based crowdfunding, a backer's motivation refers to the relevance or importance of a crowdfunding campaign. In crowdfunding contexts, entrepreneurs are naturally interconnected with their campaigns (Davis et al., 2017). Therefore, it is likely that a backer's motivation towards a crowdfunding campaign might be influenced by the campaign creator's behavior or actions. If an entrepreneur applies backer-oriented behavior or affective interaction during the fundraising period, potential backers' motivation towards the campaign may increase. Backers with higher motivation levels are more likely to contribute. As a result, the presence of entrepreneurs' backer-oriented behavior (the peripheral route), should be positively associated with campaign success. The research framework is presented in Figure 2.1.

2.3.2 The Central Route: Signals of Campaign Quality

ELM research in marketing contexts suggests that information presenting product quality should be treated as the central route of persuasion (Darley and Smith, 1993) because this "paramount concern" (Darley and Smith, 1993) is directly associated with a consumer's attitude towards the product and purchasing intention (Park et al., 2007; Chu and Kamal, 2008; Sher and Lee, 2009). In entrepreneurship studies, Mitteness et al. (2012) suggest that investors use venture-related information regarding quality to evaluate new ventures.

In terms of reward-based crowdfunding, the center of a crowdfunding pitch is the product or service offered. The predominant motivation for supporting a crowdfunding campaign is collecting rewards (Gerber and Hui, 2013). Therefore, a campaign's quality is equal to the future product's or service's quality. Although a crowdfunding campaign can be evaluated based on different types of issue-relevant information, the most relevant and direct information should be quality information about the product or service offered (Darley and Smith, 1993). Therefore, potential

backers will infer campaign quality by evaluating campaign-related information regarding the quality of their products or services. Prior crowdfunding literature suggested that campaign success is positively associated with campaign-related quality signals (Mollick, 2014; Colombo et al., 2015; Burtch et al., 2014; Ahlers et al., 2015; Kunz et al., 2016; Courtney et al., 2017), because quality signals lower the risk of decision making in an information asymmetry environment. The most common quality signals in a crowdfunding campaign are detailed introduction, embedded video pitch and introductory pictures. These quality signals not only offer more information about the campaigns but also show the preparedness of entrepreneurs (Mollick, 2014).

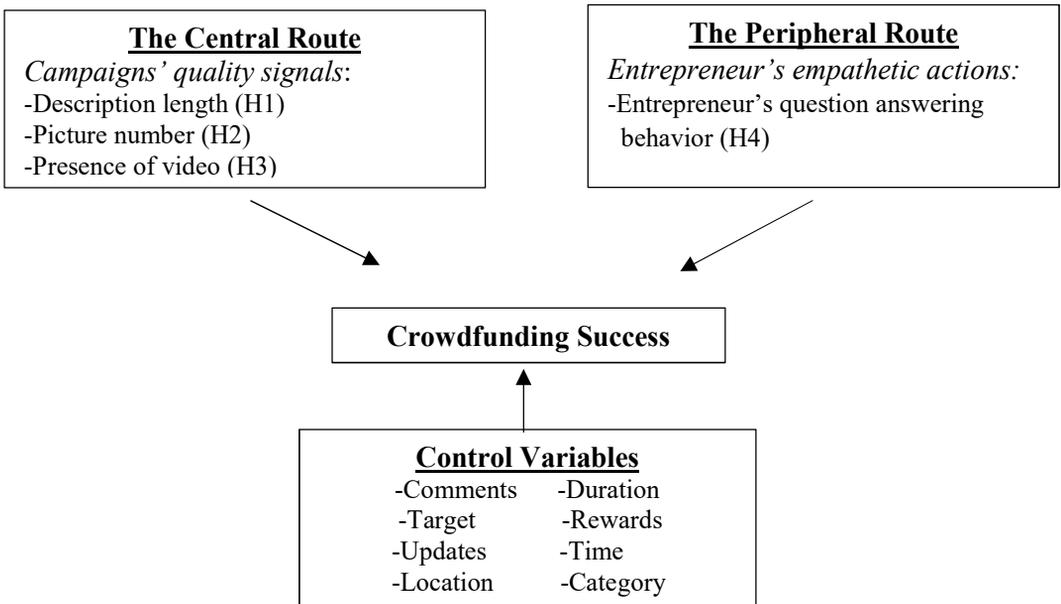


Figure 2.1 Research Framework

In reward-based crowdfunding, the description of crowdfunding campaigns is an important channel for conveying campaign-related information to potential backers. It reports specific information about the products or services that the entrepreneurs aim to offer (Kuppuswamy and Bayus, 2017). Therefore, it is a useful information source for potential backers to evaluate campaigns. An elaborated description with more words offers potential backers detailed information about the specific

products or services, improving the probability that backers will understand a campaign correctly. Therefore, an elaborated description can be treated as the quality signal of a campaign that will be positively associated with campaign success.

Mollick (2014) refers to the presence of a video on a campaign's web pitch as "the symbol of campaign preparedness and high quality". In a video, entrepreneurs can display and explain their products or services and provide detailed campaign-related information in a simple and understandable way. Through this visualized story-telling process, potential backers may generate a stronger intention to contribute because their abilities to evaluate the campaign are enhanced by more accessible information. In addition, videos may stimulate potential backers' motivation toward campaigns because the distance between entrepreneurs and backers is reduced through entrepreneurs' emotional presentations, which enhances backers' personal relevance and importance regarding the campaigns (Petty and Cacioppo, 1986). Therefore, the presence of video as issue-relevant information will be positively related to campaign success.

Lindgraad et al. (2006) found that online consumers' decision-making process is influenced by a website's visual appeal. In terms of e-commerce, vivid product presentation has a positive influence on consumers' product quality cognition by stimulating various sensory channels (Jiang and Benbasat, 2007). Consumers' understanding of products can be assisted by exploiting the enhanced product-related information presented by the vivid presentation. Pictures are formats of the vivid presentation. In crowdfunding contexts, campaign-related pictures not only present entrepreneurs' preparedness of their campaigns but also offer more information that potential backers can use to evaluate campaign quality (Mollick, 2014). In other words, for potential backers, more pictures offer a better understanding of a campaign's purposes and reward functionalities.

In reward-based crowdfunding contexts, potential backers' contributing intentions will be influenced by the issue-relevant information regarding

the overall quality of the campaigns in the form of description, picture and video. Therefore, I hypothesize:

H₁: In the reward-based crowdfunding context, the length of a campaign's description is positively associated with the campaign's success.

H₂: In the reward-based crowdfunding context, the number of pictures of a campaign's web pitch is positively associated with the campaign's success.

H₃: In the reward-based crowdfunding context, the presence of a video on a campaign's web pitch is positively associated with the campaign's success.

2.3.3 The Peripheral Route: Entrepreneurs' Question-Answering Behavior

An individual's evaluation process may also be generated by the peripheral route. This type of route involves a less complicated thought process than the critical thinking, issue-based process in the central route (Petty and Cacioppo, 1986). In addition to focusing on campaign quality signals, potential crowdfunding backers may refer to other indirect cues to evaluate campaigns. Previous marketing literature found that salespersons' empathetic actions toward consumers have significant influences on the formation of consumers' purchasing intention (Chen et al., 2011). In this paper, the discussion is limited to a peripheral cue regarding entrepreneurs' empathetic actions in the reward-based crowdfunding context: the entrepreneurs' question-answering behavior.

In the crowdfunding context, entrepreneurs remain at the center of crowdfunding campaigns. They not only create the campaigns but also take care of everything related to the campaigns, acting like jockeys to guide campaigns to success (Mittens et al., 2012). Therefore, entrepreneurs are closely intertwined with their campaigns. As an indivisible whole, potential backers have difficulty distinguishing between the effect they generate on the campaigns and the effect they generate on entrepreneurs. If this is the case, potential backers' evaluations of campaigns might be influenced by their evaluations of the

entrepreneurs (Mittness et al., 2012). Whereas information conveyed through the central route can be observed at the start of a campaign, entrepreneur-related peripheral cues can be noticed during the crowdfunding process via entrepreneurs' communicative behavior. Crowdfunding platforms offer a "Comments" sections for entrepreneurs to communicate with backers through textual messages (Balboni et al., 2014). Under the "Comments" section, entrepreneurs can answer backers' questions. The questions are mainly related to the campaigns, including shipment, functionality and safety issues. These questions offer possibilities for generating entrepreneur-sponsor interaction. In marketing literature, customers' trust in salespersons is generated by the exhibition of salespersons' perceived empathy (Aggarwal et al., 2005). Perceived empathy describes the phenomenon that an individual believes that others can feel and understand his/her situation (Plank and Reid 2010). Similarly, in the reward-based crowdfunding context, answering backers' questions is a type of empathetic action. Entrepreneurs' behavior in answering questions shows a backer-oriented attitude by the entrepreneur. Backers can sense the perceived empathy towards them through entrepreneurs' answering of questions. Potential backers may perceive from the behavior that the entrepreneurs are sensitive to their personal heterogeneous need for information and are attempting to understand their situations and satisfy their needs (Homburg et al., 2009). The perception of an entrepreneur's trustworthy level will be higher if backers perceive that their concerns are considered. In addition, backers tend to generate positive affective reactions towards the entrepreneurs if their empathetic actions are observed by potential backers. As a result, the positive reactions will cause "biased decision-making" (Isen and Baron, 1991). Specifically, backers will transport the positive reactions from entrepreneurs to their campaigns and trust their campaign quality. As a result, backers should be more likely to contribute to a campaign if they sense that entrepreneurs sincerely care about their welfare and needs via their empathetic behavior towards them (Stock and Hoyer, 2005). Therefore, entrepreneurs' question-answering behavior should be

positively associated with campaign success. I therefore hypothesize the following:

H₄: In the reward-based crowdfunding context, entrepreneurs' question-answering behavior is positively associated with crowdfunding success.

2.4 Data and Methodology

Zhongchou is used as the sample platform to test the hypotheses. Established in early 2013, Zhongchou (www.zhongchou.com) is the largest reward-based crowdfunding platform in mainland China (Philips and Kim, 2016). All campaigns initiated on the Zhongchou platform in a one-year period from January to December 2016 are examined. Through the consumer perspective, the contributors to reward-based crowdfunding are treated as consumers in this paper. They contribute by pre-purchasing future products. For this reason, the prosocial campaigns established on Zhongchou in 2016 are excluded because the contributors to prosocial campaigns are primarily motivated by altruistic incentives and thus cannot be treated as typical consumers (Gerber and Hui, 2013). The research data are collected by two steps. First, every reward-based campaign's uniform resource locator (URL) on Zhongchou is collected and recorded. New URLs are added every ten days in the one-year period. Then, the final research data are collected by downloading all the campaign-related information from the campaigns' webpages through their URLs. Duplicated campaigns, cancelled campaigns, suspended campaigns, campaigns with invalid information and campaigns that were finished after 31 December, 2016 are excluded from the final sample. As a result, the final sample consists of 1,695 different reward-based campaigns. All the information available on the campaign webpages is downloaded for further coding.

2.4.1 Measures

Dependent Variable

In this paper, the effects of the central route persuasion and the peripheral route persuasion on the success of reward-based crowdfunding are studied. Like other reward-based crowdfunding platforms, Zhongchou follows the

“all-or-nothing” principle. Therefore, entrepreneurs can only receive the pledged funding if their campaigns reach the funding targets by the end of the funding periods. Following prior crowdfunding literature (e.g., Mollick, 2014), *Success*, a binary dummy variable, is used as the dependent variable. It takes a value of 1 if a campaign reaches its funding target by its funding deadline or a value of 0 if a campaign fails to reach its funding target.

Independent Variables

Four variables are coded as independent variables. For the central route, as many prior crowdfunding studies treated the presence of a descriptive video (e.g., Mollick, 2014), the length of campaign description (e.g., Kunz et al., 2016) and the number of introductory photos on campaigns’ webpages (e.g., Colombo et al., 2015) as campaigns’ quality signals. In this paper, *Video*, *Words* and *Pictures* are used to describe campaign quality. *Video* is a binary dummy variable. If there is a video on one campaign’s webpage, it is coded 1, and 0 otherwise. *Words* is the logarithm of the number of words in a campaign’s description. *Pictures* is the logarithm of the number of pictures on a campaign’s webpage.

For the peripheral route, entrepreneurs’ question-answering behavior cannot be coded directly from the downloaded campaign information. To code this behavior, the posts in every campaigns’ “Comments” section are manually examined. During this examination process, the questions and comments in the “Comments” section are distinguished, and the total number of a campaign’s questions and comments are calculated separately. A binary dummy variable *Question* is used to distinguish whether a campaign is with or without questions. If there is at least one question in a campaign’s “Comments” section, it is coded 1, and 0 otherwise. As a result, 790 campaigns were found to have at least one question. After this step, a binary dummy variable *Reply* is created to describe entrepreneurs’ question-answering behavior. For the campaigns with at least one question, if the entrepreneurs reply to the question(s) during the funding period they are coded 1, and 0 otherwise. For the 790 campaigns with at least one question, 214 campaigns’ questions have been answered by entrepreneurs.

Control Variables

A number of campaign-related characteristics found to influence crowdfunding success are controlled. Prior studies found that a campaign's funding target and fundraising duration are negatively associated with crowdfunding success (e.g., Mollick, 2014). In this paper, *Duration* and *Target* are used to control these negative effects on crowdfunding success. *Duration* is the logarithm of the number of days for which a campaign is open and accepts funding. *Target* is the logarithm of the funding goal established by the campaign founder. In addition, previous crowdfunding literature suggests that the number of updates (e.g., Xu et al., 2014), comments (e.g., Courtney et al., 2017) and rewards (e.g., Cumming et al., 2014) are positively associated with reward-based crowdfunding success. *Updates*, *Comments* and *Rewards* are used to control these positive effects. *Updates* is the logarithm of one plus the number of updates left by entrepreneurs during a campaign's fundraising period. *Comments* is the logarithm of one plus the number of comments left by contributors during a campaign's fundraising period. *Rewards* is the total number of a campaign's rewards. In addition, three sets of dummy variables are also included to control the unobservable time-varying, category-varying and location-varying effects. Specifically, a set of month dummies is used to distinguish in which month one campaign was launched. Six binary dummy variables (*Arts*, *Entertainment*, *Agriculture*, *Technology*, *Publishing* and *Others*) are used to distinguish to which category a campaign belongs. Finally, four binary dummy variables (*West*, *East*, *Northeast* and *Central*) that identify where a campaign was launched are used to control the perceived location-varying effects.

2.4.2 Estimation Method

Because the dependent variable *Success* is a binary dummy, a logit regression will be used to test the first three hypotheses with the full sample of 1,695 campaigns. For Hypothesis 4, the effects of entrepreneurs' question-answering behavior on crowdfunding success will be tested. Therefore, Hypothesis 4 should be examined by focusing on the

campaigns with at least one question (*Question* =1). However, this procedure may cause a selection bias problem because it is possible that the campaigns with questions and the campaigns without questions are significantly different with regard to their characteristics.

To solve the perceived self-selection problem, the Heckman two-stage model (Heckman, 1976) is adopted in this paper. In the first stage, a probit regression is conducted as the selection model to estimate the likelihood of a campaign receiving at least one question. The selection model is conducted with the full sample (1,695 campaigns). The dependent variable is *Question*. Five variables (*Updates*, *Comments*, *Video*, *Words* and *Pictures*), which are expected to be associated with receiving questions, are taken as independent variables. In addition, the category variables *Arts* and *Technology* are included as extra independent variables. Specifically, campaigns in the technology category are likely to receive more questions. Different than campaigns in other categories, technological campaigns are always created based on novel technologies. Thus, potential contributors may be uncertain about the advantages and functions of these technological products because they lack the specialized knowledge needed to understand the products and the technologies behind them. Therefore, potential contributors will ask more questions in technology campaigns than in campaigns in other categories. Conversely, campaigns in the arts category tend to have fewer questions than campaigns in other categories because arts campaigns attract contributors who are familiar with arts and have interests in specific art genres. In addition, no evidence shows that the variables *Technology* and *Arts* are significantly associated with campaign success. The inverse Mills ratio (*Invmills*), which is derived from the first stage, is included as a control variable for estimating the outcome models (Hypothesis 4) in the second stage.

2.5 Results

The descriptive statistics and correlations of all variables are reported in Table 2.1 and Table 2.2. All variables' variance inflation factors (VIFs) are calculated. The mean VIF is 1.55 and the maximum VIF is 2.28, within

the thresholds suggested by McDonald and Moffit (1980). Therefore, the models will not suffer from multicollinearity problems.

For the empirical results, Hypotheses 1, 2 and 3 are tested by the results reported in Table 2.3. The dependent variables of all models in Table 2.3 are the binary dummy variable *Success*. Due to the characteristic of the dependent variable, logit regression is used to test the hypotheses. Regarding the explanatory power of the models, the Wald chi-squares of all models are significant ($p < .001$), indicating that the independent variables explain a significant portion of the variance of the dependent variable. Specifically, all models' pseudo- R^2 values exceed 58%. Model 1 contains only the control variables. The results are similar to prior studies (e.g., Mollick, 2014).

Table 2.1 Descriptive Statistics

	Obs	Mean	S. D.	Min	Max
Success	1695	0.47	0.50	0.00	1.00
Words	1695	7.58	0.57	6.41	9.18
Pictures	1695	1.69	0.93	0.00	3.43
Video	1695	0.42	0.49	0.00	1.00
Question	1695	0.47	0.50	0.00	1.00
Reply	790	0.27	0.44	0.00	1.00
Duration	1695	3.54	0.49	2.30	4.50
Target	1695	9.53	1.36	6.91	13.59
Updates	1695	1.16	0.67	0.00	3.47
Comments	1695	2.71	1.23	0.00	6.43
Rewards	1695	1.85	0.29	1.10	2.94
Northeast	1695	0.03	0.17	0.00	1.00
East	1695	0.72	0.45	0.00	1.00
Central	1695	0.11	0.32	0.00	1.00
West	1695	0.13	0.34	0.00	1.00
Agriculture	1695	0.16	0.37	0.00	1.00
Publishing	1695	0.16	0.37	0.00	1.00
Technology	1695	0.16	0.37	0.00	1.00
Others	1695	0.15	0.35	0.00	1.00
Entertainment	1695	0.15	0.35	0.00	1.00
Arts	1695	0.22	0.41	0.00	1.00

For instance, *Duration* and *Target* are negatively associated with campaign success ($B=-0.64$ and -0.56 , respectively; $p < .001$). Conversely, *Updates* and *Comments* are positively related to crowdfunding success ($B=3.94$ and 0.76 , respectively; $p < .001$). In terms of the hypotheses, Hypothesis 1 is tested by Model 2 in Table 2.3. As expected, *Words* is positively associated with the success of a crowdfunding campaign ($B=1.28$, $p < .001$). Hypotheses 2 and 3 are tested by Models 3 and 4, respectively, in Table 2.3. According to the results, *Pictures* and *Video* have positive influences on campaign success ($B=1.26$ and 1.16 , respectively; $p < .001$). These findings echo prior crowdfunding literature suggesting that quality signals are important success factors of crowdfunding campaigns (e.g., Mollick, 2014, Colombo et al., 2015).

Hypothesis 4 predicts that entrepreneurs' question-answering behavior is positively associated with crowdfunding success. The analyzing sample of Hypothesis 4 should be campaigns with at least one question. However, this process may cause a perceived self-selection problem, because campaigns with questions and campaigns without questions may be significantly different regarding their characteristics. Thus, the results will be biased if the "self-selected" sample is used to test Hypothesis 4. To rule out the self-selection bias, the Heckman two-stage model (Heckman, 1976) is adopted for testing Hypothesis 4. In the first stage, a probit regression with the full sample is conducted. The dependent variable is *Question*. This probit regression is used to calculate the likelihood of a campaign receiving at least one question. Five variables (*Updates*, *Comments*, *Video*, *Words* and *Pictures*) and two extra variables (*Arts* and *Technology*), which are expected to be associated with receiving questions, are taken as independent variables. The results of the first stage model are reported in Model 1 of Table 2.4. As discussed previously, campaigns in the *Arts* category tend to receive fewer questions than campaigns in other categories ($B=-0.71$, $p < .001$). Conversely, campaigns in the *Technology* category tend to receive more questions ($B=2.19$, $p < .001$). The inverse Mills ratio of every campaign is calculated based on the result of the first-stage model. The results of the outcome models are reported in Models 2 and 3 in Table 2.4. The inverse Mills ratio (*Invmills*) is included as a

control variable in both Models 2 and 3. In these models, the variable *Invmills* is significant ($p < .01$), which confirms the existence of the self-selection problem. In addition, the introduction of the variable *Reply* has raised the explanatory power of the model ($\Delta\text{pseudo-R}^2 = 5\%$). Hypothesis 4 is tested by Model 3 in Table 2.4, and *Reply* is positively associated with campaign success ($B=2.62, p < .001$). The result suggests that entrepreneurs' question-answering behavior is positively associated with crowdfunding success.

2.5.1 Robustness Tests

Further analyses are performed to examine the robustness of the results. In this paper, a binary dummy variable *Success* is used to describe crowdfunding success. In this robustness check section, an alternative proxy to measure crowdfunding success is adopted. The variable *Avg_amount*, which is the natural logarithm of the average funding amount, is used as the new dependent variable for the robustness check. The average funding amount is the value of a campaign's total amount of funding divided by its total backer number. A campaign with a higher *Avg_amount* value is supposed to be more successful than one with a lower value. Therefore, *Avg_amount* should be a reasonable measure of crowdfunding success. First, *Success*, the dependent variable in Models 2, 3 and 4 of Table 2.3 and Model 3 of Table 2.4, is replaced by the new dependent variable, *Avg_amount*. After that, similar regressions are conducted. The results of the new regressions are reported in Table 2.5. *Words*, *Picture*, *Video* and *Reply* are all positively and significantly associated with *Avg_amount* ($B=0.7, 0.18, 0.46$ and 2.31 , respectively; $p < .001$). To sum up, the findings remain consistent with the ones in Models 2, 3 and 4 of Table 2.3 and Model 3 of Table 2.4.

Table 2.2 Correlation Matrix

	1	2	3	4	5	6	7	8
1.Success	1							
2.Words	0.09***	1						
3.Pictures	0.39***	0.02	1					
4.Video	0.31***	0.10***	0.27***	1				
5.Question	-0.28***	-0.31***	-0.33***	-0.25***	1			
6.Duration	-0.07***	0.09***	-0.02	-0.06**	0.04*	1		
7.Target	-0.35***	0.16***	-0.14***	-0.07***	0.08***	0.15***	1	
8.Updates	0.69***	-0.08***	0.28***	0.19***	-0.11***	0.07***	-0.26***	1
9.Comments	0.45***	0.03	0.23***	0.18***	-0.20***	0.04	-0.08***	0.36***
10.Rewards	-0.03	0.35***	0.23***	0.11***	-0.14***	0.12***	0.17***	0
11.Northeast	-0.06**	0.03	-0.06**	-0.05**	0.04*	0.05**	0.03	-0.01
12.East	0.11***	0.02	-0.01	0.04	-0.03	-0.06***	-0.01	0
13.Central	-0.06**	-0.01	0	-0.04	0	0	-0.02	-0.02
14.West	-0.06**	-0.03	0.04*	0.01	0.02	0.06**	0.01	0.03
15.Agriculture	0.02	0.05**	0.02	0.06**	-0.12***	0.05**	-0.04*	0.04
16.Publishing	0.03	-0.03	-0.02	0.07***	-0.11***	0.04*	-0.03	0.08***
17.Technology	0.03	-0.10***	0.02	0	0.42***	0.07***	0.05**	0.10***
18.Entertainment	0.02	0.02	0.04*	0	-0.09***	-0.07***	-0.03	-0.04
19.Arts	-0.12***	0.14***	-0.09***	-0.05*	-0.22***	-0.05*	0.05**	-0.24***
20.Others	0.03	-0.10***	0.05**	-0.08***	0.15***	-0.04*	-0.01	0.09***

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

Table 2.2 Correlation Matrix

	9	10	11	12	13	14	15	16	17	18	19
9.Comments	1										
10.Rewards	0.01	1									
11.Northeast	-0.05**	0.05*	1								
12.East	0.08***	-0.02	-0.29***	1							
13.Central	-0.06**	-0.01	-0.06***	-0.57***	1						
14.West	-0.03	0.02	-0.07***	-0.64***	-0.14***	1					
15.Agriculture	-0.07***	0.02	0	0.04*	0.03	-0.08***	1				
16.Publishing	0.04*	-0.02	0.01	0.01	-0.03	0.01	-0.19***	1			
17.Technology	-0.02	0.02	-0.01	-0.03	0	0.03	-0.20***	-0.19***	1		
18.Entertainment	0.03	0.01	0	-0.01	-0.02	0.03	-0.18***	-0.18***	-0.18***	1	
19.Arts	0.02	0	0.01	0.01	0	-0.02	-0.23***	-0.23***	-0.23***	-0.22***	1
20.Others	0	-0.03	-0.03	-0.03	0.02	0.04	-0.19***	-0.18***	-0.18***	-0.17***	-0.22***

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

Table 2.3 The Effects of Central Route Persuasion on Crowdfunding Success

	Model 1 Success	Model 2 Success	Model 3 Success	Model 4 Success
Words		1.28*** (0.16)		
Pictures			1.26*** (0.15)	
Video				1.16*** (0.16)
Duration	-0.64*** (0.18)	-0.73*** (0.18)	-0.57** (0.19)	-0.60*** (0.18)
Target	-0.56*** (0.07)	-0.64*** (0.07)	-0.53*** (0.07)	-0.57*** (0.07)
Updates	3.94*** (0.32)	3.96*** (0.32)	4.03*** (0.33)	3.86*** (0.32)
Comments	0.76*** (0.08)	0.76*** (0.08)	0.69*** (0.08)	0.72*** (0.08)
Rewards	0.11 (0.26)	-0.75** (0.28)	-0.99** (0.31)	-0.12 (0.26)
Northeast	-0.53 (0.53)	-0.41 (0.56)	-0.19 (0.56)	-0.4 (0.52)
Central	0.36 (0.32)	0.38 (0.32)	0.37 (0.34)	0.38 (0.33)
East	0.96*** (0.24)	0.98*** (0.25)	1.06*** (0.24)	1.03*** (0.25)
Publishing	-0.16 (0.26)	-0.2 (0.26)	-0.21 (0.28)	-0.42 (0.27)
Agriculture	0.2 (0.26)	0.03 (0.28)	0.26 (0.28)	-0.01 (0.27)
Technology	-0.03 (0.26)	0.12 (0.27)	-0.05 (0.28)	-0.15 (0.26)
Entertainment	0.46 (0.25)	0.32 (0.27)	0.39 (0.27)	0.33 (0.26)
Arts	-0.05 (0.26)	-0.3 (0.27)	0.08 (0.27)	-0.12 (0.26)
Cons	-0.46 (1.06)	-7.47*** (1.47)	-1.4 (1.12)	-0.34 (1.08)
Month Dummies	Included	Included	Included	Included
N	1695	1695	1695	1695
Wald chi2	325.55	357.05	318.13	360.25
Pr2	0.58	0.61	0.63	0.60

Note: Standard errors in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 2.4 The Effects of Peripheral Route Persuasion on Crowdfunding Success

	Model 1 Question	Model 2 Success	Model 3 Success
Reply			2.62*** (0.47)
Words	-0.82*** (0.08)	0.72* (0.29)	0.62+ (0.34)
Pictures	-0.57*** (0.05)	1.71*** (0.28)	1.61*** (0.27)
Video	-0.57*** (0.08)	1.30*** (0.32)	1.38*** (0.37)
Updates	-0.23*** (0.06)	3.79*** (0.49)	3.48*** (0.44)
Comments	-0.09** (0.03)	0.74*** (0.15)	0.78*** (0.16)
Northeast	0.22 (0.23)	0.85 (0.94)	1.31 (0.7)
Central	-0.15 (0.16)	0.52 (0.61)	0.17 (0.65)
East	-0.11 (0.12)	1.34** (0.45)	1.34** (0.48)
Duration		-0.6 (0.33)	-0.47 (0.35)
Target		-0.69*** (0.11)	-1.20*** (0.18)
Rewards		-2.06** (0.63)	-1.71** (0.62)
Invmills		-1.09** (0.34)	-1.09** (0.39)
Arts	-0.71*** (0.09)		
Technology	2.19*** (0.19)		
Cons	7.80*** (0.61)	-4.22 (2.47)	-0.34 (3.02)
Month Dummies	Included	Included	Included
N	1695	790	790
Wald chi2	359.79	151.23	117.83
Pr2	0.38	0.69	0.74

Note: Standard errors in parentheses

+ p<0.1 , * p < 0.05, ** p < 0.01, *** p < 0.001

Table 2.5 Robustness Checks: The Effects of Central and Peripheral Route Persuasion on Average Funding Amount

	Model 1 Avg amount	Model 2 Avg amount	Model 3 Avg amount	Model 4 Avg amount
Reply				2.31*** (0.1)
Words	0.70*** (0.07)			0.50*** (0.09)
Pictures		0.18*** (0.04)		0.14** (0.05)
Video			0.46*** (0.07)	0.26* (0.11)
Duration	-0.28*** (0.07)	-0.23** (0.07)	-0.21** (0.07)	-0.05 (0.09)
Target	0.28*** (0.03)	0.32*** (0.03)	0.31*** (0.03)	0.00 (0.04)
Updates	0.83*** (0.06)	0.75*** (0.06)	0.75*** (0.06)	0.31*** (0.07)
Comments	0.26*** (0.03)	0.26*** (0.03)	0.26*** (0.03)	0.24*** (0.04)
Rewards	-0.33** (0.12)	-0.04 (0.12)	0.02 (0.12)	-0.22 (0.16)
Northeast	-0.26 (0.21)	-0.15 (0.21)	-0.15 (0.21)	-0.14 (0.26)
Central	0.16 (0.13)	0.19 (0.13)	0.21 (0.13)	0.19 (0.16)
East	0.08 (0.1)	0.13 (0.11)	0.12 (0.1)	0.01 (0.13)
Publishing	0.07 (0.12)	0.16 (0.13)	0.06 (0.13)	
Agriculture	0.11 (0.13)	0.25 (0.13)	0.16 (0.13)	
Technology	0.16 (0.14)	0.16 (0.14)	0.1 (0.14)	
Entertainment	0.24 (0.13)	0.35** (0.14)	0.30* (0.13)	
Arts	0.27* (0.12)	0.47*** (0.12)	0.40** (0.12)	
Inv mills				-0.43*** (0.12)
Cons	-3.59*** (0.55)	0.25 (0.4)	0.34 (0.4)	-0.36 (0.68)
Month Dummies	Included	Included	Included	Included
N	1695	1695	1695	790
F	38.85	33.70	34.26	60.25
r2	0.27	0.22	0.23	0.53

Note: Standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001

2.6 Conclusions and Implications

Based on ELM, this paper explores the interactions of the central route (campaigns' quality signals) and the peripheral route (entrepreneurs' question-answering behavior) to influence campaign success in reward-based crowdfunding contexts. Through the consumer perspective, the results echo previous ELM research. Specifically, in addition to issue-relevant information (campaigns' quality signals), peripheral cues (entrepreneurs' question-answering behavior) are also positively associated with campaign success.

2.6.1 Theoretical Implication

First, this paper extends the emerging research stream on crowdfunding success. Prior studies focused on various campaign-related features associated with crowdfunding success, including campaign description (Marom and Sade, 2013), the presence of video pitch (Mollick, 2014), funding target (Mollick, 2014), campaign duration (Frydrych et al., 2014) and reward type (Belleflamme et al., 2014). In addition, certain entrepreneur-related information (e.g., human capital and social capital) is also related to crowdfunding success (e.g., Colombo et al., 2015). However, prior studies only explored the effects of different types of information (campaign-related and entrepreneur-related) on crowdfunding success separately. In addition to exploring the effects of different types of information alone, this paper also examines how different types of information interact to influence crowdfunding success. In particular, based on the empirical results, both campaign-related information (campaigns' quality signals) and entrepreneurs' empathetic actions (entrepreneurs' question-answering behavior) influence crowdfunding success.

Moreover, this paper extends the application of ELM in the reward-based crowdfunding context by examining the effects of central route persuasion and peripheral route persuasion on campaign success. Based on ELM theory, a dual process structure has been applied to explore crowdfunding success. In particular, central route persuasion is related to direct persuasion via campaign-related information (campaigns' quality signals).

Peripheral persuasion is an indirect persuasion via peripheral cues (entrepreneurs' question-answering behavior). The findings suggest that both central route persuasion and peripheral route persuasion are significantly associated with crowdfunding success.

This paper offers a special perspective to understand reward-based crowdfunding success. In the reward-based crowdfunding context, backers contribute to receive future products instead of gaining financial returns. Therefore, these contributors behave like consumers instead of investors. In this case, the consumer perspective (Priem, 2007) offers a new way to explore how to create successful reward-based crowdfunding campaigns. The consumer perspective treats consumers as the center of entrepreneurial value creation (Priem et al., 2012) and offers meaningful supplements to prior crowdfunding success literature. In addition to offering campaign-oriented information, the consumer perspective enables entrepreneurs to better anticipate crowdfunding outcomes by performing empathetic actions such as answering potential contributors' questions.

2.6.2 Practical Implication

This paper offers practical implications for both entrepreneurs and crowdfunding platforms. For entrepreneurs, this paper suggests that campaign-related information and entrepreneurs' empathetic actions jointly influence crowdfunding success. Therefore, offering high-quality campaign-related information is not enough to generate successful crowdfunding campaigns. Entrepreneurs should also maintain good relationships with potential contributors by conducting empathetic interactions (e.g., answering contributors' questions). Such interactive actions can be considered as peripheral cues that will lead to better crowdfunding outcomes. In addition, since entrepreneurs' empathetic interactions with contributors are positively associated with reward-based crowdfunding success, crowdfunding platforms should help to facilitate such beneficial actions by providing effective communication tools such as real-time communication tools and multi-media communication tools. In addition, crowdfunding platforms should provide tutorials for novice

crowdfunding entrepreneurs on performing entrepreneur-contributor relationship management based on the consumer perspective.

2.6.3 Limitations and Future Research

There are several limitations regarding this paper that offer directions for future research.

The first limitation is the research data. The findings are developed based on an analysis of data from a Chinese crowdfunding platform. Although nearly all reward-based crowdfunding platforms follow similar standards and guidelines to support entrepreneurial fundraising, it remains unclear whether the findings can be generalized to other crowdfunding markets. Individuals from different cultural backgrounds tend to have different preferences with regard to persuasion routes (Brumbaugh, 2002). Future research may use data from other platforms in other crowdfunding markets (e.g., Kickstarter from the United States) to check whether the findings are universal. Similarly, the findings are based on data collected from a reward-based crowdfunding platform. It would be interesting to determine whether the findings can be applied to other crowdfunding models (equity-based, donation-based and loan-based) because contributors in different crowdfunding models tend to have different preferences for persuasion routes based on varying motivations (Allison et al., 2015). Thus, a comparison study of the reward-based model and other models may be a novel research direction for future work.

In addition, the effects of different persuasion routes may also vary by campaign category. For example, compared to technology campaigns, publishing campaigns may depend more on the central route persuasion because no special knowledge is required to make evaluations. Given the limited volume of the research data, it is not possible to explore the effects of different routes in different campaign categories. This point should be another interesting direction for future research.

According to previous ELM research, the central route consists of two types of information: information about the product and information about the venture providing the product (MacInnis and Stayman, 1993).

Similarly, in terms of crowdfunding, in addition to campaign-related information, information related to entrepreneurs can also be treated as important issue-relevant information. Therefore, potential backers' evaluations of campaigns might also be influenced by entrepreneur-related information (Mittiness et al., 2012). For instance, education level and prior experience are two types of entrepreneur-related information that are always treated as proxies of entrepreneurial ability (e.g., Jung et al., 2015). A high education level and prior crowdfunding experience enables entrepreneurs to develop high-quality campaigns. However, entrepreneur-related information is not included in the models as such information is not publicly available on Zhongchou. Future research should consider entrepreneur-related information together with campaign-related information when exploring the effects of central route persuasion on campaign success in the crowdfunding context.

In this paper, only entrepreneurs' empathetic actions are included in the models as peripheral cues. However, other peripheral cues affecting the contributors may also influence campaign success. Prior marketing literature reported that consumers' online product reviews as third-party endorsements are closely associated with potential consumers' purchasing decisions (e.g., Chen and Xie, 2005). In an information asymmetry setting, potential consumers tend to infer that a product is of high quality if the information collected from the product's reviews is positive overall. Similarly, contributors' comments on the campaigns can be treated as third-party endorsements in the reward-based crowdfunding context. The information communicated via the comments helps potential contributors to evaluate campaigns. A campaign is likely to be supported by potential backers if the information conveyed through comments is positive. Such positive information tends to be associated with perceived high campaign quality and high entrepreneur credibility. By applying text analysis, future research may benefit from a better understanding of the effects of peripheral route persuasion on campaign success by taking the overall attitude of campaign comments into consideration.

Lastly, only the main effects of the central route and the peripheral route on crowdfunding success are tested in this paper. However, peripheral routes may sometimes interact with central routes and influence the effects of central routes on given tasks (Kim and Benbasat, 2010). It would be interesting for future studies to answer the following questions: Do entrepreneurs' empathetic actions moderate the effects of campaign-related information on crowdfunding success? If moderating effects exist, are the influences of central routes on crowdfunding success strengthened or weakened by the participation of peripheral cues? What mechanism is behind the moderating effects?

Chapter 3. Self-funding for Crowdfunding: The Effects of Entrepreneurs' Impression Management on Crowdfunding Outcomes

Abstract

This paper presents empirical research exploring the relationship between entrepreneurs' impression management (IM) and entrepreneurial resource acquisition in a reward-based crowdfunding context. We examine the impacts of entrepreneurs' IM tactics and the strength of the IM tactics on crowdfunding outcomes by analyzing unique sample data from the largest reward-based crowdfunding platform in China. Our results suggest that entrepreneurs' self-funding behavior as an IM tactic not only leads to crowdfunding success but also enhances crowdfunding performance. Our results echo and enrich signaling theory and IM theory in the crowdfunding context and offer practical suggestions for entrepreneurs who use crowdfunding as their fundraising channel.

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3.1 Introduction

Researchers have shown that acquiring adequate resources is the central process of entrepreneurial activities. These resources, especially financial resources, are crucial for entrepreneurs who seek to establish and expand their ventures (Starr and MacMillan, 1990; Aldrich and Fiol, 1994; Zott and Huy, 2007; Zahra, 2010). Because of the “liability of newness” (Stinchcombe, 1965), novice entrepreneurs experience difficulties in obtaining financial resources from external resource holders. Resource holders do not know to what extent their investment will be rewarded, and thus they are reluctant to offer financial support to novice entrepreneurs (Brush et al., 2001). In addition, information asymmetry between novice entrepreneurs and resource holders makes this problem even more severe (Zott and Huy, 2007).

Crowdfunding, an innovative online channel to facilitate entrepreneurial fundraising, is increasingly becoming an accepted fundraising instrument for start-up entrepreneurs (Belleflamme et al., 2010; Ordanini et al., 2011; Agrawal et al., 2013; Mollick, 2014). However, the “liability of newness” and information asymmetry problem still exist with regard to this innovative fundraising tool (Belleflamme et al., 2014). Therefore, it is important to find solutions to these problems to help entrepreneurs successfully acquire external financial resources. Solutions can be found by answering the following question: What are the determinants of success for crowdfunding campaigns? This question is considered to be the major focus of present crowdfunding research (Drover et al., 2015).

To answer this question, the majority of studies have focused on signaling theory (Spence, 1973). Signaling theory is used to explain how information asymmetry can be solved by using alternative sources of information (signals). Previous research has identified several signals that are positively associated with crowdfunding success, including campaign quality, social networks, human capital, rewards and entrepreneurial narratives (Josefy et al., 2017). Specifically, Mollick (2014) found a crowdfunding campaign’s descriptive information (text length, pictures, video pitches, etc.) as quality signals to be positively related to campaign

success. In addition, Drover et al. (2015) suggested that a third-party endorsement can be considered as a venture's quality signal from venture capitalists' perspective. Furthermore, certain scholars have recognized that crowdfunding outcomes are influenced not only by entrepreneurs' external social capital (families and friends) but also by internal social capital (crowdfunding community social networking) (Mollick, 2014; Agrawal et al., 2015; Colombo et al., 2015). Ahlers et al. (2015) indicated that entrepreneurs' human capital is positively associated with campaign results in equity crowdfunding markets by analyzing entrepreneurs' social capital, human capital and intellectual capital from their offering documents. Moreover, Cholakova and Clarysse (2015) found that crowdfunding rewards are a key determinant of the success of crowdfunding campaigns. This finding is applicable to both reward-based crowdfunding and equity-based crowdfunding. Additionally, entrepreneurial narratives may influence crowdfunding success from a signaling perspective. For instance, in loan-based crowdfunding markets, Moss et al. (2015) suggest that the entrepreneurial orientation (EO) narrative is more effective in attracting investors than the virtuous orientation (VO) narrative. However, adverse results are noted in the same market by other studies (Allison et al., 2015).

Previous studies have offered some understanding of the success determinants of crowdfunding campaigns. However, in our opinion, these findings have deficiencies. First, a campaign's real quality is difficult to determine from campaign-related information (descriptive text, pictures, video pitches, etc.) because such information is not objectively offered. The source and distributor of the information are the entrepreneurs themselves. Additionally, crowdfunding backers are always treated as "small investors" who lack the experience and ability to evaluate campaign quality (Ahlers et al., 2015), making evaluations even more difficult. Entrepreneurs are forced by crowdfunding platforms to present their campaigns in similar manners, offering similar types of information in crowdfunding web pitches (Zott and Huy, 2007). Although the nature of crowdfunding is open (Josefy et al., 2017), it is not borderless. In terms of entrepreneurs, campaign-related information can only be offered under

the screening and guidance of crowdfunding platforms. Entrepreneurs cannot post whatever they want on their campaigns' web pitches to prove their campaign qualities. In this case, posting a crowdfunding pitch is similar to accomplishing a checklist designed by crowdfunding platforms. To summarize, we can conclude that the explanation power of quality signals on crowdfunding success may be dampened by information subjectivity, small investor nature and entrepreneurs' behavioral similarity. Therefore, it is important for entrepreneurs to find alternative ways to distinguish themselves from competitors to obtain successful fundraising.

In management literature, entrepreneurs' impression management (IM) has long been treated as an important tool to enhance business legitimacy and facilitate entrepreneurial resource acquisition (Rao, 1994; Aldrich and Fiol, 1994; Gradner and Avolio, 1998; Lounsbury and Glynn, 2001). In our study, we address the application of entrepreneur IM in crowdfunding contexts as a novel approach to understanding crowdfunding campaign success. To the best of our knowledge, there is no empirical research focusing on entrepreneur IM and campaign performance in crowdfunding contexts, and little is known about whether and how entrepreneur IM may influence the performance of crowdfunding campaigns. Specifically, can entrepreneurs' IM be treated as the "alternative signal" that drives positive crowdfunding outcomes?

In this paper, we present a novel empirical study to fill this research gap. We collect our data from Zhongchou (www.zhongchou.com), the largest reward-based crowdfunding platform in China. Entrepreneurs' self-funding behavior is used as a proxy to describe entrepreneur IM, and the Zhongchou platform offers an ideal and relevant ground for this study. On this platform, the contributing records (supporter ID, contributing amount and contributing time) of every campaign are visible to the public. Therefore, it is possible to determine whether an entrepreneur has ever contributed his/her own campaign based on his/her unique platform user ID. To reduce the perceived self-selection bias, we use a coarsened exact matching (CEM) approach to refine our initial sample. The hypotheses are

tested based on the matched sample, which includes 372 crowdfunding campaigns. Our findings are consistent with previous IM literature (Rao, 1994; Aldrich and Fiol, 1994; Gradner and Avolio, 1998; Lounsbury and Glynn, 2001). The application of entrepreneurs' IM tactic (self-funding) not only leads to fundraising success but also enhances campaign performance by attracting more pledges, higher completion ratios and additional backers. In the next section, the research hypothesis is presented based on the theoretical foundation. Then, we present our research data and analyzing methodology. Next, our empirical results are presented and discussed. Finally, we discuss the conclusions and implications of our study.

3.2 Theory and Hypotheses

3.2.1 Signaling Theory and Crowdfunding

As online financing markets, crowdfunding markets suffer from a serious information asymmetry problem (Mollick, 2014). Decision makers require information to guide their behavior (Connelly et al., 2011). In the crowdfunding context, potential contributors use information to evaluate campaigns before contributing. Stiglitz (2002) divided information into two categories: public information and private information. Public information is available to all individuals, whereas private information is only available among specific individuals. According to signaling theory (Spence, 1973), both public and private information can be used as signals to solve the information asymmetry problem. Information that describes the quality of one party is always treated as public information (Stiglitz, 1990). In terms of crowdfunding, information about quality refers to the soft information of crowdfunding campaigns in crowdfunding contexts. Such descriptive information (text, pictures, video pitches, etc.) is disclosed by entrepreneurs as quality signals for potential backers to perceive campaign quality in the online information asymmetry environment (Ahlers et al., 2015). These quality signals have been shown to have positive influences on crowdfunding outcomes in prior research (e.g., Mollick, 2014) because such quality information decreases potential

backers' perceived risk by offering extra information for them to evaluate campaigns.

However, the quality information may be biased due to the single source of information (Burtch, Ghose and Wattal, 2013). For instance, entrepreneurs hold more private information about their campaigns than potential backers. It is possible for entrepreneurs to overstate their campaigns' advantages and to understate the disadvantages to attract more backers (Mavlanova, Benbunan-Fich, and Koufaris, 2012). Therefore, to comprehensively estimate campaign quality, potential contributors need private information to supplement public information (Krishnan and Hartline, 2001). Unlike public information, private information is only available to specific individuals. In an information asymmetry setting, individuals are more sensitive to private information than to public information. In other words, private information is valuable in the individual decision-making process, reducing the information asymmetry problem by offering scarce information between parties. In the crowdfunding context, entrepreneurs' certain behavior during fundraising periods can be treated by potential backers as self-collected private information. From the perspective of potential backers, entrepreneurs' impression management (IM) may be considered as an alternative channel to collect private information for evaluating campaigns.

3.2.2 Impression Management

Impression management is defined as an individual's specific behavior that is designed to achieve rewards or desirable outcomes from others by influencing others' perceptions (Goffman, 2002). IM can be applied to various competitive contexts, including political elections, personal relationships and marketplace environments (Deschacht and Maes, 2017). Generally, the actor, target and tactic are the three main elements of IM theory. The actor is the person who conducts the IM behavior, the target is the potential receiver of the IM behavior, and the different ways of conducting IM behavior are defined as IM tactics. Ingratiation, excuses and self-promotion are three common examples of IM tactics (Schlenker, 1980; Leary and Kowalski, 1990; Johnson et al., 2016). IM tactics can

display impressions in both direct and indirect ways, which can be defined as “first-order impression” and “second-order impression” (Deschacht and Maes, 2017). To understand these two types of impression, we reinterpret them using the lens of symbolic action theory (Lievens and highhouse, 1983; Rafeali and Vilnai-Yavetz, 2004). According to symbolic action theory, particular actions can display both intrinsic meaning and symbolic meaning. The intrinsic dimension of an action is explained as the intrinsic purposes or tangible functions of conducting specific actions, which is similar to “first-order impression”. Conversely, the symbolic dimension of action is described as the evoked meaning of specific actions, which can be used to explain “second-order impression” (Deschacht and Maes, 2017). We apply a cost–reward model as the theoretical framework to analyze individual IM behavior (Leary and Kowalski, 1990). Based on this model, individual IM behavior can be explained as investing behavior. In addition, both the intrinsic and symbolic dimensions of IM behavior have their costs, which is binary. Pecuniary cost is the money-related cost that the actor paid to conduct particular IM behavior. It is always associated with the intrinsic dimension of IM behavior. Non-pecuniary cost is related to the symbolic dimension of IM, which can be explained as the IM target’s feeling regarding the actor’s particular IM behavior. The non-pecuniary cost is associated with the “risky nature” of IM behavior (Deschacht and Maes, 2017).

3.2.3 IM in the Crowdfunding Context

In crowdfunding contexts, entrepreneurs’ IM behavior can be described as follows: An entrepreneur (IM actor) pays certain costs (tangible/intangible) to conduct particular behavior (IM tactic) to achieve investment (IM reward) from potential investors (IM target). Similar to other investing activities, rational entrepreneurs may only conduct IM behavior if the reward of conducting it exceeds the costs. In the crowdfunding market, entrepreneurs invest time and energy to make their campaigns attractive and trustworthy to potential supporters to achieve their fundraising targets. However, they seem to behave similarly. For example, under the guidance of crowdfunding platforms, it is common practice for entrepreneurs to post campaign-related descriptions, photo

galleries and videos on their crowdfunding pitches to increase the credibility of their campaigns (Mollick, 2013). However, similar to novel ventures, crowdfunding campaigns pose significant risks and uncertainty. Because of this uncertainty, it is insufficient to evaluate campaign credibility only by intrinsic contents (Gort and Klepper, 1982). Credibility should also depend on the symbolic actions of the entrepreneurs who shape the credibility (Krueger, 2007).

Based on the previous discussion, individuals' IM behavior should simultaneously convey symbolic and intrinsic meaning. In addition, the crowdfunding market as a competitive two-sided market offers suitable ground for the application of IM behavior (Belleflamme et al., 2015). In terms of crowdfunding, entrepreneurs' IM behavior can be defined as the particular behavior conducted by entrepreneurs to attract investment from potential backers by influencing their perceptions. Self-promotion is one common type of IM tactic. It is defined as the actions that individuals use to emphasize their advantages, claim their achievements and promote their own contributions (Rudman, 1998; Heine, Lehman, Markus and Kitayama, 1999; Heine, Kitayama and Lehman, 2001; Mezulis et al., 2004). Entrepreneurs' self-promoting behavior may distinguish them from the competition by offering extra symbolic information to enhance their campaigns' credibility.

The comments and updates on campaign web pitches are tested to be positively associated with crowdfunding success in the previous literature (e.g., Mollick, 2013) because they show the preparedness of the entrepreneurs (Mollick, 2013). In our opinion, comment-replying behavior and information-updating behavior can be considered as self-promoting behavior based on its perceived purposes. Specifically, replying to comments and updating campaigns not only presents campaign-related information intrinsically but also shows signals of entrepreneurs' responsibility.

However, these tactics are imperfect because of their inevitable disadvantages and objective limitations. First, the cost of conducting these tactics is high. For instance, it is costly to make both pecuniary and non-

pecuniary campaign updates. Second, these tactics work passively; both IM tactics are designed and advocated by crowdfunding platforms to help entrepreneurs develop campaign legitimacy. Therefore, it is difficult to determine whether entrepreneurs conduct the tactics actively or passively follow the advocates from the platforms' guidance. The answer to this question matters significantly regarding the function of the tactics, because passively adopted tactics may lead to the "risky nature" of IM behavior (Deschacht and Maes, 2017). As a negative "second-order impression", it will generate a lower probability of obtaining resources (Zott and Huy, 2007). Third, the application of these tactics is limited to realistic situations. For example, entrepreneurs cannot reply to comments if there are no comments. Similarly, for certain campaigns, it might be the case that no updates are made in limited fundraising periods. Lastly, the effectiveness of conducting these tactics is difficult to determine. From a backer's perspective, the information that entrepreneurs convey via these IM tactics has a high level of subjectivity. In addition, inexperienced backers have difficulty evaluating the quality of campaign-related information (Hui et al., 2014). Therefore, it is challenging to determine the credibility and quality of the information generated from the comments and updates. As a result, these existing "tactics" may not effectively promote the fundraising of crowdfunding campaigns.

3.2.4 Influences of Entrepreneurs' IM Tactics on Crowdfunding Outcomes

Self-funding behavior, described as the situation in which entrepreneurs invest in their own campaigns, can be treated as an entrepreneur IM tactic. Compared to comment replying and information updating, self-funding has natural advantages in practice. Notably, entrepreneurs' self-funding is an active self-promotion behavior. Entrepreneurs can choose to conduct self-funding or not. In addition, the cost of conducting this tactic is relatively low. The majority of reward-based crowdfunding platforms follow the "all-or-nothing" strategy. Backers can get their money back if a campaign fails. In this case, the only cost of self-funding is the time cost of the money that entrepreneurs invest in their own campaigns. If a campaign becomes successful, the self-funding will be used together with

other contributions from the public to make the dream a reality. Therefore, self-funding seems to be a feasible IM tactic compared to other existing tactics. In addition, the presence of self-funding behavior will be associated with positive crowdfunding outcomes for the following reasons. First, entrepreneur's self-funding behavior promotes the popularity of campaigns intrinsically by enhancing the contributing momentum. A crowdfunding campaign's popularity is measured by the number of backers and total pledges. Entrepreneurs' self-funding behavior increases the total backer number and the accumulated pledge money at the same time. Therefore, the practice of self-funding boosts campaign popularity directly. In the crowdfunding market, campaigns with more backers and higher pledges tend to win more funding based on the notion of the "wisdom of the crowds" and herding (Surowiecki and Silverman, 2007). Therefore, self-funding behavior can be interpreted as a self-reinforcing process because it potentially increases the probability of acquiring contributions from backers. This momentum can be simply interpreted: campaigns receive more contributions just because they receive more contributions. In other words, entrepreneurs' self-funding behavior causes a so-called "Matthew effect" (Merton, 1968). To sum up, entrepreneurs' self-funding behavior conveys a positive "first-order impression" of his/her campaign directly to potential backers (Zott and Huy, 2007).

Additionally, self-funding behavior has a symbolic dimension. Unlike the intrinsic dimension, behavior's symbolic dimension is evaluated by emotions, values, preferences, logic and precedence, which make novelty ventures familiar and credible to resource holders and influence their decisions (Brown, 1994; Lounsbury and Glynn, 2001; Rafaei and Vilnai-Yavetz, 2004). Therefore, if recognizable, entrepreneurs' self-funding behavior tends to evoke potential backers' "second-order impression" towards a campaign. Specifically, self-funding behavior presents entrepreneurs' ambition and extra commitment to a campaign, which is positively associated with business success (Gadenne, 1998). Potential backers may be awestruck and impressed by an entrepreneur's active self-promoting behavior. For poorly resourced entrepreneurs, self-funding behavior can also be interpreted as a monetary commitment to their

campaigns. It shows that they not only can create good campaigns but also can hold strong winning beliefs by actively investing their own money in their campaigns. Such commitment may guarantee that they will not shrink back when problems appear but instead will fight to win their campaigns, not only for backers' benefits but also for themselves (Zott and Huy, 2007).

As an online community-based concept, crowdfunding has its own culture. Previous entrepreneurship literature showed that failed entrepreneurs are always passive culture participants in their culture contexts. Their failure is caused by the ignorance of utilizing culture strategically to increase the credibility and legitimacy of their business (Aldrich and Fiol, 1994; Hargadon and Douglas, 2001). The key component of crowdfunding culture is to "cooperate with others" (Gerber and Hui, 2013). If recognizable, entrepreneurs' self-funding behavior will present the culture of cooperating in a positive way. Specifically, this self-promotion tactic makes potential backers feel that entrepreneurs are working together with them in the same crowdfunding community to make something meaningful happen, instead of merely asking for money to make their own dreams come true without any personal devotion. Therefore, we propose the following:

H₁: In crowdfunding contexts, the presence of an entrepreneur's self-funding behavior is positively associated with his/her campaign's success.

In addition, Zott and Huy (2007) suggest that the strength (variety and frequency) of IM tactics is positively associated with successful resource acquisition. For illustration, they indicate that entrepreneurs tend to acquire more resources by using IM tactics frequently. In our case, the strength of self-funding behavior can be described from two aspects: how much money do entrepreneurs contribute to their campaigns in total and how many times do they fund their own campaigns in total? Therefore, we propose the following:

H₂: In crowdfunding contexts, the strength of an entrepreneur's self-funding behavior is positively associated with his/her campaign's performance.

H_{2a}: In crowdfunding contexts, the total number of times an entrepreneur uses self-funding is positively associated with his/her campaign's performance.

H_{2b}: In crowdfunding contexts, the total amount of an entrepreneur's self-funding is positively associated with his/her campaign's performance.

Based on the previous discussion, entrepreneurs' self-funding behavior should be positively associated with a campaign's crowdfunding outcomes; it not only increases a campaign's popularity intrinsically but also demonstrates an entrepreneur's strong belief in winning the campaign symbolically. Self-funding behavior reassures potential backers that an entrepreneur is able to conduct the campaign well and will not abandon his/her campaign even under unpleasant situations. The strength of self-funding behavior has an impact on the potential success of a campaign.

3.3 Data and Methodology

3.3.1 Data

In this study, we collect our data from Zhongchou (www.zhongchou.com). Established in early 2013, Zhongchou is the largest reward-based crowdfunding platform in China (Philips and Kim, 2016). This platform employs the "all-or-nothing" model. Only successful campaigns can claim their funding by the end of the fundraising process. The collected funding of failed campaigns is refunded to the contributors.

The application of the computer-automated data extraction method has a high level of validity when conducting research in online contexts (Mollick, 2014). Following previous crowdfunding studies, our dataset was extracted directly from Zhongchou by applying the web crawler program. Zhongchou offers full access to campaign-related information and information related to campaigns' supporting records. This feature offers relevant data for our empirical study. We have captured data from

both successful and failed campaigns in a one-year period: January to December 2015. As a result, information from a total of 2,233 finished campaigns has been extracted as our initial sample. Our extracted information can be categorized into two types: campaign-related information and contributor-related information. For campaign-related information, we collect the following information for each campaign: funding target (in CNY); category; location (province); picture number; post time (month); duration (day); description length (word count); perk number; introductory video or not; total pledge (in CNY); final backer number; final completion ratio and developer's user ID. For contributor-related information, the following data was collected for each contributor: user ID; total contributing amount on certain campaign; and total contributing times to a certain campaign. To mitigate the bias caused by inappropriate data, we exclude 650 campaigns from our initial sample. Of these excluded campaigns, 518 have missing values or inaccessible webpages. In addition, 27 campaigns that are only funded by campaign developers are excluded. The remaining 105 campaigns are created by experienced entrepreneurs. We maintain only their first campaigns in our sample to mitigate any "learning by doing" performance bias. (Hsu, 2007). As a result, our final sample is composed of 91,657 supporting records from 1,583 campaigns.

Table 3.1 presents the descriptive statistics of our sample. In total, 1,583 campaigns are included in our models. For an average campaign, the funding target is set to 26,133 CNY with 6.26 reward perks and an introductory description of approximately 2,000 words. Approximately twenty-three percent of the campaigns include a video. Normally, an average campaign has 4 pictures on its webpage with a duration of 46 days. All campaigns can be divided into two categories: campaigns with self-funding and campaigns without self-funding. To sum up, approximately 23 percent (372 campaigns) of our sample involves self-funding. In general, 613 campaigns (39 percent of all campaigns) were successful in satisfying their fundraising target, and the average funding rate was 82 percent. Each campaign collected 10,850 CNY on average from approximately 58 backers. Among the self-funding campaigns, an

entrepreneur contributed 347 CNY on average. Based on the extracted data, we coded the dependent variables, independent variables and control variables separately for further analysis.

Table 3.1 Descriptive Statistics

Variable	Obs	Mean	S. D.	Min	Max
Backer_num	1583	57.9	233.11	1	6349
Total_pledge	1583	10850.36	38442.99	21	837069
Completion_ratio	1583	0.82	1.88	0	22.34
D_success	1583	0.39	0.49	0	1
D_self_inv	1583	0.29	0.45	0	1
Self_inv_time	1583	0.8	3.03	0	54
Self_inv_amount	1583	347.31	2828.49	0	82001
Perks	1583	6.26	2	2	19
D_video	1583	0.23	0.42	0	1
Wordcount	1583	1973.74	1378.71	629	12608
Goal	1583	26133.23	68870.62	189	1200000
Picture_num	1583	4.37	5.79	1	46
Duration	1583	46.15	33.69	10	90

3.3.2 Measures

Dependent Variables

In this paper, the dependent variables are the outcomes of crowdfunding. According to prior research, the crowdfunding outcome is a multifaceted concept and can be generally divided into two categories, crowdfunding success and crowdfunding performance (Ahlers et al., 2015). In this paper, we adopt four variables to measure crowdfunding outcomes from different perspectives. The variables are listed as follows:

Success Dummy ($D_{success}$): This variable measures whether a campaign has reached its funding target successfully. This dichotomous dummy variable takes a value of 1 (success) if one campaign's completion ratio is higher or equal to 1. It takes a value of 0 (failure) if the completion ratio is lower than 1.

Completion Ratio (*Completion_ratio*): This variable measures the completing degree of a campaign. It is the ratio between a campaign's final pledge and a campaign's funding target.

Funding Amount (*Total_pledge*): This variable presents the total amount collected by a campaign. It is equal to a campaign's total pledges at the end of its funding period.

Number of Contributors (*Backer_num*): This variable counts the total contributor number of a campaign at the end of its funding period. The campaign founder's self-funding is excluded from calculation.

Independent Variables

To test our hypothesis, we use the following three independent variables:

Dummy of self-funding (*D_self_inv*): This is a binary variable. If a campaign's developer contributes to his/her own campaign, it is coded 1, and 0 otherwise.

Number of self-funding time (*Self_inv_time*): This variable is the calculation of a campaign developer's total self-funding times in his/her campaign.

Amount of self-funding (*Self_inv_amount*): This variable calculates a campaign developer's total self-funding amount in his/her campaign.

Control Variables

Campaign quality is closely related to campaign success. A campaign is more likely to be successfully funded if it offers more detailed campaign-related information. Such additional information facilitates potential crowdfunding contributors' quality evaluation process in an information asymmetry environment by demonstrating how well-prepared the entrepreneurs' campaigns are. Therefore, we included a number of control variables related to campaign success by various researchers (Mollick, 2014; Ahlers et al., 2015; Colombo et al., 2015).

Length of Description (*Wordcount*): The length of a campaign's descriptive content in words.

Video Dummy (*D_video*): This is a binary dummy variable. If there is a video on a campaign's webpage, it is coded 1, and 0 otherwise.

Goal (*Goal*): The funding goal of a certain crowdfunding campaign.

Number of Perk Level (*Perks*): The number of reward perks shown on a campaign's webpage.

Location Dummy (*D_E, D_W, D_M, D_NE*): A set of dummy variables to distinguish the area in which a campaign is based. All the provinces in China have been categorized into four large regions: east region, west region, middle region and northeast region. This division is officially conducted by the National Bureau of Statistics of the People's Republic of China based on locational factors, political situations and economic reasons.

Category Dummy (*D_Tech, D_Pub, D_Ent, D_Arts, D_Agri, D_Others*): A set of dummy variables to distinguish to which category a campaign belongs (technology, publishing, entertainment, arts, agriculture and others).

Month Dummy (*D_Month*): A set of dummy variables to identify in which month a campaign is created.

Number of Pictures (*Picture_num*): The number of pictures posted on a campaign's webpage.

Duration (*Duration*): The number of days for a campaign to raise funds.

3.3.3 Estimation Method

We note in Table 3.1 that certain variables are not normally distributed and very skewed with long tails. To decrease regression bias, we run our models with the natural log of all the skewed variables, which will satisfy the assumption of variables' asymptotic normality.

To estimate the pure effect of self-funding on crowdfunding outcomes, we must ensure that campaigns with self-funding and campaigns without self-funding are similar when considering other campaign-related characteristics. If not, the performance differences may not be caused by the adoption of self-funding but rather by the differences in campaign-related characteristics or by both of them. Ignoring the differences in campaign characteristics will cause significant selection bias when estimating the effect of self-funding on campaign outcomes (Heckman, 2013).

In this paper, we apply the coarsened exact matching (CEM) approach to reduce selection bias (Blackwell et al. 2009; Iacus et al. 2012). Specifically, CEM is designed to match campaigns without self-funding (control group) to campaigns with self-funding (treatment group) by balancing observable campaign characteristics, thus creating an “ideal” counterfactual for campaigns with self-funding (Blackwell et al. 2009). To determine which observable characteristics to match, we first identify which variables are significantly distinct between the campaigns in the treatment group and the ones in control group. We run a logit regression with D_self_inv as a dependent variable, with all the campaign-related characteristics as independent variables for the identifying process. The result of the regression is presented in Model 1 of Table 3.2. Next, we create a matched sample of campaigns in the treatment group and the control group by conducting exact matching for campaign category, campaign time and campaign location. Last, we match our campaigns on Ln_goal , $Ln_wordcount$, $Ln_duration$ and $Perks$ by employing three coarse buckets defined by the 25th, 50th and 75th percentiles of these variables (Singh and Agrawal, 2011). As a result, there are 372 campaigns in our final matched sample. A total of 113 campaigns (72% of all treated campaigns) are matched with 259 campaigns from the control group. To check the effectiveness of our matching, we run the previous logit regression model (with D_self_inv as dependent variable) again by using the matched sample. The results are depicted in Model 2 of Table 3.2. We find that no campaign-related variables are significantly correlated with D_self_inv , meaning that the systematic differences between campaigns

with self-funding and campaigns without self-funding have been largely reduced. In other words, our matching is effective.

The correlation matrix of the matched sample is presented in Table 3.3. To test whether our models suffer from the problem of multicollinearity, we calculate all variables' variance inflation factors (VIFs). According to McDonald and Moffit (1980), the threshold of average VIF and maximum VIF are 6 and 10, respectively. In our case, the average VIF is 1.77 and the maximum VIF is 4.29, which are within the conventional thresholds. Therefore, we can conclude that multicollinearity will not be a problem in our models. To test our hypothesis, we estimate the following equations:

$$\text{Campaign Success} = \beta_0 + \beta_1 D_self_inv + \beta_2 \text{Control Variables} + \varepsilon$$

$$\text{Campaign Performance} = \beta_0 + \beta_1 self_inv_time + \beta_2 \text{Control Variables} + \varepsilon$$

$$\text{Campaign Performance} = \beta_0 + \beta_1 self_inv_amount + \beta_2 \text{Control Variables} + \varepsilon$$

Table 3.2 Matching Variables Identification and Matching Effectiveness Check

	Model 1 D self inv	Model 2 D self inv
Ln_goal	0.30*** (0.04)	-0.13 (0.06)
Ln_wordcount	-0.47*** (0.13)	-0.03 (0.12)
Ln_duration	0.328 (0.04)	0.47 (0.36)
Ln_picture_num	-0.67*** (0.05)	0.02 (0.03)
Perks	0.48* (0.23)	-0.14 (0.01)
D_video	-0.04 (0.02)	0.08 (0.10)
Category FE	Yes	Yes
Month FE	Yes	Yes
Location FE	Yes	Yes
Constant	-0.49 (0.34)	-0.37 (0.23)
N	1583	372
PR ²	0.07	0.04

Note: standard errors in parentheses. * p<0.05, **p<0.01, *** p<0.001

Table 3.3 Correlation Matrix (Matched Sample)

	1	2	3	4	5	6	7	8	9	10	11	12
1. D_success	1											
2. Ln_total_pledge	0.66*	1										
3. Ln_completion_ratio	0.73*	0.87*	1									
4. Ln_backer_num	0.57*	0.75*	0.65*	1								
5. D_self_inv	0.09*	0.14*	0.08*	0.24*	1							
6. Self_inv_time	0.11*	0.15*	0.11*	0.23*	0.41*	1						
7. Ln_self_inv_amount	0.20*	0.29*	0.21*	0.26*	0.77*	0.51*	1					
8. Ln_goal	-0.23*	0.13*	-0.38*	0.09*	0.09*	0.06	0.11*	1				
9. Ln_wordcount	0.23*	0.26*	0.20*	0.18*	-0.09*	0.07*	0.14*	0.09*	1			
10. Ln_picture_num	0.14*	0.18*	0.16*	0.23*	0.01	0.04	0.01	0.03	0.03	1		
11. Ln_Duration	0.42*	0.49*	0.45*	0.51*	-0.01	0.05	0.05	0.03	0.08*	0.32*	1	
12. Perks	-0.03	0.11*	0.02	0.12*	0.04	0.01	0.02	0.17*	0.36*	0.05	0.05	1
13. D_video	0.06	0.10*	0.05	0.09*	-0.05	0.00	0.07*	0.08*	0.07*	-0.03	0.02	0.07*

Note: *p<0.01

3.4 Results

Campaign success is described by the dummy variable *D_success*. Campaign performance, the other dependent variable, is presented by three variables: *Completion_ratio*, *Backer_num* and *Total_pledge*. Self-funding behavior, our independent variable, is presented by the Dummy variable *D_self_inv*. The strength of self-funding is described by two variables: *Self_inv_time* and *Self_inv_amount*. Control variables are also included in our models as discussed and defined in last chapter. Our hypotheses are tested by 7 models and the results are presented in Table 3.4. In terms of model explanatory power, the value of PR^2 or R^2 of all our models suggests that our independent variables explain a substantial portion of the dependent variables. For instance, the minimum value of PR^2 or R^2 is 0.28 and the highest value is 0.46, and the value of Chi^2 and *F-score* are all tested to be significant ($p < .001$). Therefore, we can state that all our models have adequate explanatory power to predict campaign outcomes.

For the empirical results, H_1 is tested by the results reported in Model 1 of Table 3.4. We run a logistic regression to estimate Model 1 because our dependent variable (*D_success*) is binary. As expected, our independent variable (*D_self_inv*) is positively associated with the success of a crowdfunding campaign. With all continuous variables at their mean value and dummy variables at their median value, a campaign with self-funding leads to a 27-percent increase in the likelihood of being successful. We can conclude that the presence of self-funding is positively associated with campaign success. In addition, our findings for the effects of control variables are similar to prior studies (Mollick, 2014). For instance, the funding target is negative and significant ($p < .001$) in predicting campaign success. Conversely, the presence of video pitch and elaborated description are positively and significantly related to campaign success.

In Table 3.4, we find evidence that the presence of entrepreneurs' self-funding behavior is positively associated with campaign success (H_1). Furthermore, we want to test whether the strength of self-funding behavior is related to crowdfunding campaign performance (H_2). We use the number of self-funding times (*Self_inv_time*) and the total amount of self-

funding (*Self_inv_amount*) to describe the strength of self-funding behavior. We use campaigns' completion ratio (*Completion_ratio*), total funding amount (*Total_pledge*) and total number of backers (*Backer_num*) to measure the performance of crowdfunding campaigns. We assume that crowdfunding campaign performance might be enhanced by an increase in entrepreneurs' self-funding time (H_{2a}) and entrepreneurs' self-funding amount (H_{2b}). We run robust OLS regressions to estimate our models, and the results are reported in Table 3.4. In Models 2 and 3, the dependent variable is the natural log of the total funding amount (*Ln_total_pledge*); the dependent variable is the natural log of the campaign completion ratio (*Ln_completion_ratio*) in Models 4 and 5. For Models 6 and 7, the dependent variable is the natural log of the total number of backers (*Ln_backers_num*). In Models 2 and 4, the coefficients of the *self_inv_time* variable are positive and significant ($p < .05$). In terms of Model 6, the *self_inv_time* variable is positively and significantly ($p < .001$) associated with total backer number. In addition, the coefficients of the *Ln_self_inv_amount* variable are all positive and significant ($p < .001$) in Models 3, 5 and 7. These results provide adequate support to H_{2a} and H_{2b} separately. Specifically, if we set all control variables as unchanged, we find that a one-percent increase in entrepreneurs' self-funding amount is associated with a 0.25-percent increase in total pledges, a 0.25-percent increase in completion ratio and a 0.14-percent increase in total backer number. For entrepreneurs' self-funding times, we find that one self-funding time addition can cause a 0.08-percent increase in total pledges, a 0.08-percent increase in the completion ratio and a 0.09-percent increase in total backer numbers. In terms of control variables, we find that campaigns with higher targets tend to have more pledges but lower completion ratios. Specifically, *Ln_goal* has positive coefficients in Models 2 and 3 and negative ones in Models 4 and 5 ($p < .001$). Campaigns with video pitches are likely to have more pledges, higher completion ratios and more backers than campaigns without them. This result is presented in all models in Table 3.4. Similarly, the coefficients of *Ln_picture_num* are also positive and significant ($p < .001$) in all models in Table 3.4. In addition, more words in campaign descriptions are

positively associated with more pledges and higher completion ratios. Evidence can be found in Models 2, 3, 4 and 5 ($p < .001$). In addition, more reward perks can only attract more backers. However, they are not related to more pledges and higher completion ratios. These findings are in line with previous crowdfunding literature, in which quality signals are important success factors of crowdfunding campaigns (Mollick, 2014, Colombo et al., 2015, Josefy et al., 2016).

To examine the robustness of our results, we conduct additional estimates of our models. We use the average amount of self-funding per time (*Avg_self_inv_amount*) to measure the strength of self-funding. *Avg_self_inv_amount* is the calculation of a campaign owner's average self-funding amount during the fundraising period. It is the result of self-funding amount divided by self-funding time. We then re-estimate all the models (except Model 1) in Table 3.4. The results are reported in Table 3.5. We find that our results are still robust if we use the average amount of self-funding per time to measure self-funding strength instead of the number of self-funding and total amount of self-funding. Specifically, all the coefficients of *Ln_avg_self_inv_amount* are positive and significant ($p < .001$) in Models 1, 2 and 3 of Table 3.5. These results suggest that higher levels of self-funding behavior are associated with more total pledges, higher completion ratios and more backers, similar to the conclusions in Table 3.4. Therefore, our findings are still valid when adopting a new measure to represent self-funding strength. The new measure of self-funding has similar effects on predicting campaign performance.

Table 3.4 The Effects of Self-investing Strength on Campaign Success and Campaign Performance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	D_success	Ln_total_pledge		Ln_completion_ratio		Ln_backer_num	
D_self_inv	0.37*** (0.15)						
Self_inv_time		0.08* (0.03)		0.08* (0.03)		0.09*** (0.02)	
Ln_self_inv_amount			0.25*** (0.02)		0.25*** (0.02)		0.14*** (0.01)
Ln_goal	-0.60*** (0.06)	0.17*** (0.04)	0.13** (0.04)	-0.84*** (0.04)	-0.87*** (0.04)	0.03 (0.02)	0.02 (0.02)
Ln_wordcount	0.80*** (0.14)	0.60*** (0.12)	0.55*** (0.11)	0.60*** (0.12)	0.55*** (0.11)	0.07 (0.07)	0.03 (0.07)
Ln_duration	0.09 (0.08)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02* (0.01)	0.02* (0.01)
Ln_picture_num	0.97*** (0.08)	1.00*** (0.05)	0.97*** (0.05)	1.00*** (0.05)	0.97*** (0.05)	0.60*** (0.03)	0.59*** (0.03)
Perks	-0.04 (0.03)	0.01 (0.03)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)	0.05** (0.02)	0.06*** (0.02)
D_video	0.35* (0.16)	0.44*** (0.13)	0.39** (0.12)	0.44*** (0.13)	0.39** (0.12)	0.19* (0.07)	0.15* (0.07)
Category FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.65 (1.12)	1.29 (0.94)	1.73 (0.90)	1.29 (0.94)	1.73 (0.90)	2.01*** (0.56)	2.29*** (0.55)
Wald Chi ² (16)	327.27						
F		59.87	61.08	76.03	79.97	50.25	54.31
N	372	372	372	372	372	372	372
R ²	0.28	0.35	0.38	0.43	0.46	0.40	0.41

Note: standard errors in parentheses, * p<0.05, **p<0.01, *** p<0.001

Table 3.5 Robustness Check: The Effects of Average Self-investing on Campaign Performance

	Model 1	Model 2	Model 3
	Ln_total_pledge	Ln_completion_ratio	Ln_backer_num
Ln_avg_self_inv_amount	0.28*** (0.02)	0.28*** (0.02)	0.14*** (0.02)
Ln_goal	-0.14** (0.04)	-0.87*** (0.04)	0.03 (0.02)
Ln_wordcount	0.55*** (0.11)	0.55*** (0.11)	0.03 (0.07)
Ln_duration	0.01 (0.01)	0.01 (0.01)	0.02* (0.01)
Ln_picture_num	0.97*** (0.05)	0.97*** (0.05)	0.59*** (0.03)
Perks	-0.02 (0.03)	0.02 (0.03)	0.06** (0.02)
D_video	0.38** (0.13)	0.38** (0.13)	0.15* (0.07)
Category FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Location FE	Yes	Yes	Yes
Constant	1.73 (0.91)	1.73 (0.91)	2.27*** (0.56)
N	372	372	372
PR ² /R ²	0.38	0.46	0.40
F	61.61	80.25	53.73

Note: standard errors in parentheses, * p<0.05, **p<0.01, *** p<0.001

3.5 Conclusions

In this paper, we analyze the effects of entrepreneurs' IM on campaign outcomes in crowdfunding contexts by taking entrepreneurs' self-funding behavior as an IM tactic. Our empirical findings show that entrepreneurs' self-funding behavior has positive impacts on campaign success and performance.

3.5.1 Theoretical and Practical Implications

Our study provides both theoretical and practical contributions. This research contributes to the emerging crowdfunding literature by applying

entrepreneur IM. We contribute to the understanding of the key question of crowdfunding research: What are the success factors of crowdfunding campaigns? Based on signaling theory, the existing crowdfunding literature addresses how campaigns attract more funding based on campaign-related information. Our study enriches the signaling theory by suggesting that entrepreneurs' IM as an active entrepreneur-oriented signal is applicable in promoting campaign outcomes. This finding is novel to the field of crowdfunding, as researchers have not yet fully examined the relationship between entrepreneur IM and crowdfunding campaign outcomes. Our study mitigates the gap by suggesting that entrepreneurs' IM has crucial influences on crowdfunding campaign outcomes. In addition, we enrich the IM theory by applying it to crowdfunding contexts (Goffman, 2002). The results of this paper have useful implications for crowdfunding entrepreneurs. Our findings propose that campaign developers' self-funding has positive impacts on campaign outcomes. In other words, entrepreneurs will achieve higher probabilities of successful fundraising and better campaign performance if they fund their own campaigns. Therefore, we suggest that entrepreneurs should behave like active players in the crowdfunding community by conducting IM tactics.

3.5.2 Limitations and Future Research

Our study has several limitations. First, although we alleviate self-selection bias by adopting the CEM approach via balancing observable campaign characteristics, entrepreneur-related information may also act as another source of self-selection bias. For example, this may occur if an entrepreneur has adopted self-funding in his/her first successful crowdfunding campaign. These "experienced" entrepreneurs tend to have higher probabilities to conduct self-funding than first-time crowdfunding entrepreneurs because they may associate their success with the adoption of self-funding. In addition, based on previous experience, they also have better knowledge on how to make good use of self-funding than their novice peers. Therefore, a prediction bias caused by entrepreneurs' "learning by doing" behavior may occur if we ignore entrepreneur-based differences (Hsu, 2007). Our results may not suffer from this bias because

we excluded all campaigns created by experienced entrepreneurs. However, this does not mean that this bias is not important. It offers us a new way to accurate our matching results. Future research may generate better results by taking entrepreneur-related features into consideration.

Second, our findings are based on analyzing the data from a Chinese reward-based crowdfunding platform, which affects the explanatory power and universality of our findings. Literature suggests that IM behavior exists in all cultures. However, the function of the same IM tactic may be different from culture to culture because individuals' behavior tends to be mediated by differences in institutions, cultures and social norms (Zaidman and Drory, 2001). Therefore, it will be interesting to test our findings in a non-Chinese crowdfunding context. Future studies could be conducted by analyzing data from other crowdfunding markets (e.g., Kickstarter) to determine whether our results can be generalized. Meaningful findings could be generated by comparative studies. In addition, it also would be interesting to test whether our findings are valid in other crowdfunding models. For example, is it still the case that entrepreneurs' IM is positively related to campaign results in donation-based crowdfunding contexts? If not, what is the mechanism behind it? Another limitation of our study is the relatively small volume of our data sample. We only tested our models by analyzing a one-year sample regardless of different campaign categories. Given the limited volume of our dataset, it is difficult to test our findings based on categorized subsamples. For the same reason, the discussion of IM's function in different categories is also omitted when building our regression models. However, it is reasonable to assume that backers contribute to campaigns from different categories with distinctive motivations. It might be the case that our results are only valid in certain categories and invalid in others when taking category heterogeneity into consideration. Future work should test our findings by analyzing categorized sub-samples to gain more comprehensive results.

Lastly, we use entrepreneurs' self-funding as the tactic to present entrepreneurs' IM. We deem that entrepreneurs' self-funding behavior can

be treated as a signal of ambition and commitment to their campaigns. In this study, we cannot find a better proxy to present entrepreneurs' IM tactics besides the self-funding behavior. However, our proxy may be imperfect because IM tactics are "risky by nature" (Deschacht and Meas, 2017). They may cause adverse effects if the targets determine that such tactics are merely "impression management". For future study, qualitative methods such as interviews or questionnaires should be combined with quantitative methods to generate sophisticated findings.

Overall, our work represents an initial step in examining the impacts of entrepreneurs' IM tactic on crowdfunding outcomes. Our findings suggest that entrepreneurs' IM tactics have positive influences on campaign success and performance in crowdfunding contexts. Theoretically, our findings extend the application of IM theory in crowdfunding contexts and enrich the literature regarding crowdfunding success determinants. On a practical level, our findings suggest that entrepreneurs can increase the probability of collecting funding successfully by funding their own campaigns. As an IM tactic, self-funding behavior shows an entrepreneur's ambition and commitment to his/her campaign, which makes the campaign stand out from others.

Chapter 4. Hedonic Value and Crowdfunding Campaign Performance: A Propensity Score Matching Analysis

Abstract

In the existing literature on crowdfunding success, previous studies give little attention to the impact of contributors' hedonic value enhancement on campaign results. In the crowdfunding context, utilitarian value is somehow difficult to satisfy due to information asymmetry and adverse selection problems. Therefore, campaigns that enhance hedonic value will be attractive to potential contributors. Lottery is a method to increase consumer hedonic value that can influence contributors' behavior as a result. We hypothesize that campaigns with a hedonic treatment (lottery) may have a better performance than other campaigns. A unique, self-extracted two-year Chinese crowdfunding platform dataset has been applied as our analysis sample. We first employ propensity score matching (PSM) methods to control for the endogeneity of hedonic treatment adoption (lottery). We then run OLS and probit regressions to test our hypotheses. Our analysis suggests a significant positive relationship not only between lottery adoption and campaign results but also between lottery adoption and campaign popularity. Overall, our results suggest that an often-ignored factor - hedonic treatment (lottery) - can play an important role in crowdfunding campaign performance.

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4.1 Introduction

The concept of crowdfunding emerges from the broader concept of crowdsourcing, which implies using the “crowd” as a source of ideas, feedback, and solutions to develop corporate activities (Belleflamme et al., 2013). Crowdfunding can be defined as “an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes” (Lambert and Schwienbacher, 2010). Specifically, Belleflamme et al. (2013) indicates that reward-based crowdfunding is based on the advanced purchase (pre-ordering) of products that are not available on the market. As a reward, campaign initiators offer nonmonetary rewards (perks) for contributors. Potential contributors are the target crowd of campaign developers on reward-based crowdfunding platforms. It is natural that contributors’ behavior is crucial for crowdfunding success. However, several obstacles may hinder supporters’ contributing behavior. Subjectively, these “small investors” usually do not have enough investing experience (Karatzas et al., 1987). Therefore, it is difficult for them to distinguish or assess campaign quality correctly before contributing. Objectively, in an online context, the existence of serious information asymmetry between entrepreneurs and investing contributors may lead to adverse selection problem (Spence, 1973). Therefore, solving these problems is a top priority for entrepreneurs seeking to successfully raise money from a reward-based crowdfunding platform.

The majority of current studies on crowdfunding are based on signaling theory. The impact of quality signals on campaign success has been examined extensively by various scholars (Aragwal et al., 2011; Belleflamme et al., 2013; Mollick, 2014; Colombo et al., 2015 and Giudici et al., 2013). Entrepreneurs must provide enough descriptive information about their campaign (description text, video pitch, pictures, etc.) if they want to be funded successfully. Detailed descriptive campaign information provides a signal that the campaign not only is of high quality but is also well-prepared (Mollick, 2014). Such well-documented campaigns have a much easier time attracting potential contributors

because adequate information about the campaigns facilitates contributors' utilitarian value satisfaction. For example, potential contributors can save due diligence time and have more control of the crowdfunding process based on elaborated campaign information (Koufaris et al., 2001).

However, consumption is not merely a task-oriented behavior. It can also be intrinsically satisfying if the experience provides enjoyment to the senses, fun, feelings, and fantasies. Nelson (1970) divides consuming goods into experience goods and search goods based on their distinctive features. Intrinsic satisfaction is presented as the hedonic value of consumption experience (Hirschman and Holbrook, 1982). In prior marketing literature, the lottery has long been used as a non-price-based hedonic sales promotion strategy (Lichtenstein et al., 1997). Chandon et al. (2000) suggest that hedonic benefits can be achieved by buyers via non-price-based sales promotions. Therefore, we can infer that products with the lottery feature are more favorable to potential consumers for the satisfaction of hedonic value at a higher level.

Similarly, crowdfunding supporters' contributing behavior is driven not only by utilitarian value but also by hedonic value (To et al., 2007). For instance, crowdfunding supporters contribute to campaigns and inevitably enjoy the campaigns' features at the same time. Therefore, such contributing behavior can be treated as experience goods consumption. Based on previous analyses of reward-based crowdfunding campaigns, we are curious whether hedonic factors also matter to campaign success in a reward-based crowdfunding setting. If so, do these factors also have a positive influence on campaign results? Notably, the effect of hedonic value on campaign success has been scarcely explored in crowdfunding contexts. Our paper is the first to explore the effect of hedonic value based on real data from a reward-based crowdfunding platform.

To explore our research question, we extract a sample of 2,276 reward-based crowdfunding campaigns between January 2014 and December 2015 from the largest reward-based crowdfunding platform in China, Zhongchou.com. Unlike other platforms, Zhongchou.com offers entrepreneurs a way to promote their campaigns by providing a lottery in

their campaigns. Certain campaigns posted on Zhongchou.com offer a lottery perk for potential contributors. In such campaigns, contributors pay 1 CNY for a chance to win a prize. All participants receive different random numbers as their lottery references. If the campaign is successfully funded, the platform will officially draw several lucky numbers as prize winners from all participants. The prize is always the crowdfunding product. If the campaign fails, the money is refunded. The lottery treatment is officially organized by the platform. Thus, Zhongchou.com offers a unique setting for our research. To study the net effect of lottery on crowdfunding success, a propensity score matching (PSM) method has been used to treat our data. We use probit and OLS regressions to test our hypotheses.

This paper is structured as follows: In part 2, we explain the theoretical background and develop the hypotheses. The data and methodology are discussed in part 3, and the results are presented in part 4. The implications, limitations and potential areas for future research are discussed in the final section.

4.2 Literature Review and Hypothesis

4.2.1 Reward-based Crowdfunding as Experience Goods Consumption

It is important to differentiate search goods and experience goods before studying online consumer behavior. Nelson (1970) distinguished between experience goods and search goods based on consumers' ability to discover product quality prior to purchasing. According to Nelson, search goods are defined as goods whose full dominant attribute information is accessible before purchase. Conversely, experience goods are goods whose dominant attribute information cannot be achieved without purchasing or using the product. Collecting information on experience goods is not only costly but also difficult compared to search goods (Nelson, 1970). Search goods always contain objective and tangible attributes. In terms of search goods, the purchasing process can be presented as an attempt to maximize consumers' expected utility along these measurable characteristics. In contrast, experience goods are evaluated by the feelings they stimulate, rather than the functions they

perform. Experience goods consumption is more subjective, aesthetic, holistic, emotive and sensational (Frost et al., 2008). To sum up, consumers care more about the utilitarian value of search goods, and consumers' hedonic value is more important than utility satisfaction when consuming experience goods. When a search is costly and difficult, the goods are considered as experience goods (Nelson, 1970).

In reward-based crowdfunding markets, entrepreneurs behave like sellers. They sell their own novelty products (campaigns) in a pre-ordering way to a crowd of potential consumers (contributors). Consumption will not occur until the campaigns successfully reach their funding goals. In addition, contributors' knowledge about the crowdfunding campaign is limited, because newness is one key characteristic of crowdfunding campaigns (Schwienbacher and Larralde, 2010). The majority of crowdfunding products do not previously exist in the market. Therefore, it is difficult for potential contributors to collect enough dominant attribution information to estimate a campaign's quality in this market.

However, this problem might be solved by the application of the Internet, which not only decreases the cost of gathering and sharing information but also provides new channels to discover products before purchase (Hoffman and Novak, 1996). For example, Lynch and Ariely (2000) suggest that communicating with consumers who have already used the product and referring other consumers to comments about the product are two useful ways to estimate product quality for potential online consumers. However, in terms of crowdfunding, neither of these approaches is effective. For instance, no consumer has a chance to experience the forthcoming product before it is successfully funded. Therefore, it is impossible to find previous customers for product evaluations. Moreover, if it is possible, referring to others' opinions is useful for a search good purchase but is useless for experience goods, because product quality for experience goods can only be established by experiencing the product in person (Nelson, 1970). In this case, other consumers' judgment is useless for experience goods consumption (Hirschman and Holbrook, 1982). Such indirect evaluation does not offer reference value because of the

subjectivity of the experience. The misuse of secondhand comments may lead to an incorrect prediction of consumers' satisfaction when they face the same product (Hamilton and Thompson, 2007). Specifically, in terms of crowdfunding, a campaign's attractiveness to potential contributors is not only determined by the campaign's objective attributes (e.g., perceived utility) but also by contributors' subjective feeling, based on the personal sensation of the campaign (Frost et al., 2008). Therefore, a campaign with positive comments from others may not appeal to an individual investor.

To offer a reference for quality estimation, entrepreneurs tend to offer more elaborated information (elaborated description, video pitch) on their campaigns' homepage to facilitate fundraising. However, in an information asymmetry market, initiators may be motivated to provide fake information for successful fundraising. It is risky for potential contributors to discover product quality based on unreal information as they will suffer from serious moral hazard and adverse selection problems (Sannajust et al., 2014).

To sum up, in crowdfunding markets, predominant campaign information collection is costly and difficult. The quality of crowdfunding campaigns is inherently unknown. Therefore, we suppose that contributing to reward-based crowdfunding campaigns are similar to consuming experience goods (Ward and Ramachandran, 2010).

4.2.2 Hedonic Value and Utilitarian Value in Reward-based Crowdfunding

Bolton and Drew (1991) explain value as a tradeoff between price and quality. Value is also presented as the general evaluation of one product's utility based on the balance of imbursement and procurement (Zeithaml, 1988). However, from a consumer behavior perspective, the conception of value should be explained in a more complex way if multiply dimensions are involved (Holbrook, 1994). Based on this, Babin et al. (1994) divide value into two main categories: utilitarian value and hedonic value.

Hirschman and Holbrook (1982) conceptualize utilitarian value as mission critical, rational, decision effective and goal oriented. However, consumers also enjoy the shopping experience along with purchase task completion. Such enjoyable experiences can be explained as hedonic value, which is defined as an overall judgment of experiential benefits and sacrifices (Babin et al., 1994). It may be too narrow to define value only relating to utilitarian purposes. Specifically, consumers can anticipate achieving tangible products from purchasing behavior, but they can also obtain a more intrinsic, intangible, pleasure-related reward during the shopping experience. The benefit of hedonic value is experiential and emotional. It refers to consumption behaviors in search for happiness, fantasy, awakening, sensuality, and enjoyment (Bridges and Florsheim, 2005). Hirschman and Holbrook (1982) explain this intangible reward as the achievement of pleasure, feeling, aesthetics, emotion, and enjoyment during the shopping process. In general, utilitarian shopping value reflects the task-related value of a shopping experience, whereas hedonic shopping value reflects the value found in the shopping experience itself, which is independent from task-related activities (Babin and Attaway, 2000).

Similar to the shopping behavior discussed by Tauber (1972), we suggest that rewards receiving (utilitarian value) and enjoyment of the crowdfunding process (hedonic value) are of the same importance in the case of crowdfunding. Supporting crowdfunding campaigns is not only utilitarian value-related but also enjoyment-related. Therefore, the value measurement should account for more than functional utility. In our study, we consider value as a concept related to both hedonic feelings and tangible rewards. Crowdfunding experiences can stimulate value either by accomplishing utility goals or satisfying hedonic feelings. Specifically, potential contributors could be motivated simply by gaining the novelty product they like. However, being part of a community, helping others, or simply supporting a cause are other motivations that drive people to contribute (Gerber and Hui, 2012). To sum up, individuals contribute to campaigns not only for the utilitarian value of the products but also for the enjoyment achieved during the crowdfunding process.

In marketing literature, consumers can be divided into goal-oriented consumers and exploration-oriented consumers based on distinct searching behavior (Janiszewski, 1998). Goal-oriented consumers have a clear shopping target in their minds. They search to gather useful information about the products they want to purchase. Conversely, there are no certain shopping plans in exploration-oriented customers' minds. They search only for fun or just browse.

Searching behavior in crowdfunding is similar to that in marketing areas, which means that contributors could be either goal-oriented or exploration-oriented. It is natural that contributors care about the utilitarian value; in other words, they are goal-oriented. A goal-oriented contributor would generate contributing intention once they found enough information to evaluate campaign quality. Previous studies suggest that entrepreneurs can improve their campaign performance by facilitating contributors' utilitarian value satisfaction. For example, an elaborated description or an introductory video pitch about the campaign can lead to a higher success rate of the campaign, because such treatments can offer more useful information for indecisive potential contributors to evaluate campaign quality (Mollick, 2014). However, as we discussed previously, supporting reward-based crowdfunding campaigns is similar to experience goods consumption because it is difficult and costly to collect information about future novelty products. Due to information asymmetry, it is also risky for potential contributors to support campaigns only based on the additional entrepreneur-offered information regarding their campaigns. Therefore, it is always difficult for potential contributors to satisfy their utilitarian value. For some contributors, it is natural to seek hedonic value because they cannot satisfy their utilitarian value in an information asymmetry setting. As a result, they are also exploration-oriented in crowdfunding settings. These contributors may only want to find, evaluate and understand the idea behind the campaigns (novelty products), receiving pleasure in the process; it is not about obtaining the novelty physical product. Parsons (2002) notes that one of the strongest motivations for Internet shoppers is to discover new trends. They may

only want to obtain hedonic value through arousal, playfulness, and positive affect through shopping behavior (Wolfenbarger and Gilly, 2001).

In conclusion, both goal-oriented and exploration-oriented behavior influence purchase intention. Emotional stimulation could lead to exploration-oriented consumers' impulsive purchasing or unplanned shopping behavior (Moe, 2003). Babin et al. (1994) suggest that hedonic value can influence unplanned shopping behavior. Therefore, it is more realistic to increase a crowdfunding campaign's probability of success by fulfilling contributors' hedonic value when their utilitarian value is difficult to satisfy.

4.2.3 Lottery as a Hedonic Value Enhancement

People gain more pleasure from uncertain situations than from certain ones (Lee and Qiu, 2009). As a non-price-based sales promotion strategy, a lottery offers consumers indirect hedonic stimulation rather than straightforward utilitarian benefits based on its uncertain attributes (Chandon et al., 2000). The lottery contributes to sensory, emotional, and cognitive stimulation, which will enhance the hedonic experience. In marketing literature, the lottery has long been used as a hedonic sales promotion strategy for various goods and services. Mattila and Wirtz (2001) show that online shops' pleasurable stimulation increase impulse purchasing behavior. Such stimulating experiences enhance consumers' willingness to buy. In addition, Snnna (1996) suggests that consumers' uncertain experience in a positive event might mentally simulate their consumption of possible favorable prospects.

Likewise, in the crowdfunding context, a lottery feature on the campaign homepage may increase potential contributors' stimulation level and enhance the hedonic value of the campaign, offering contributors a more enjoyable and participative campaign than others (Lee, 2002). As a result, potential contributors enjoy the stimulation offered by the campaigns' lottery feature. They appeal to contributors' hedonic experience by generating fantasies and positive emotional arousal while supporting campaigns (Babin et al., 1994). Hence, we can infer that the lottery treatment may have a positive effect on reward-based crowdfunding

success. Taking the discussions above into consideration, we propose that the adoption of a lottery is positively associated with crowdfunding success in the reward-based context.

4.3 Data and Methodology

4.3.1 Data

Our research data are extracted from Zhongchou.com, the largest reward-based crowdfunding platform in China. Zhongchou.com was established in 2013. The campaigns on Zhongchou.com employ the “all-or-nothing” model; a campaign can only be recognized as successful if its pledge amount surpasses its funding target by the end of its funding period. If a campaign fails to reach the target amount, the pledges are returned to the funders. Our dataset consists of all the campaigns posted on Zhongchou.com in the two-year period from January 2014 to December 2015. Only successful campaigns are permanently accessible on Zhongchou.com, whereas failed campaigns are deleted after the end of the funding period. However, aligning with prior crowdfunding studies, we have captured both successful and failed campaign information through the application of a web data extraction method (Mollick, 2014). This data extraction method offers high levels of data validity when dealing with online data. Specifically, in this paper the extraction work was conducted by the web crawler program. A total of 4,533 campaigns are extracted in the two-year period, and our sample includes only typical reward-based campaigns.

We exclude prosocial campaigns from the final sample. Normally, such campaigns do not tend to offer materialized rewards. After this step, our dataset consists of 2,950 pre-selling campaigns. However, due to the automated data extraction method, 113 campaigns are dropped from the dataset for invalid access or missing data. In addition, we only keep entrepreneurs’ first campaigns in our database, thereby eliminating the predicted bias caused by initiators’ “learning by doing” behavior (Hsu, 2007). An experienced entrepreneur who has previously developed crowdfunding campaigns may have a higher probability of creating successful campaigns (Gompers et al., 2010). As a result, 561 campaigns

developed by experienced initiators are excluded from the dataset. Finally, we obtain a sample including 2,276 campaigns, which is a good representation of the entire population of Zhongchou.com.

Ahlers et al. (2015) note that the definition of success in the context of crowdfunding platforms should be multifaceted. To a certain extent, we can treat a financially failed campaign as a successful one if it attracts thousands of fans or has thousands of comments. Hui et al. (2014) found that community interaction among crowdfunding participants is significant in crowdfunding success because expanding awareness and establishing connections are also entrepreneurs' motivations for becoming involved in crowdfunding (Gerber and Hui, 2013). Hence, we also consider the number of fans and the number of comments as two new indicators to evaluate crowdfunding success, in addition to the common success measures (success or not, funding ratio, total backer number and total pledge amount). For each campaign in the final sample, we extract the following variables from each campaign's webpage by the automatic extraction technique: duration, establishment year, perk levels, category, location, description length, target, result, picture count, lottery, video pitch, total comments, total pledge, total backers, total fans, and total updates. We divide these variables into three groups: result variables, treatment variables and covariates. The definitions of the variables are explained in Table 4.1, and descriptive statistics are presented in Table 4.2. On average, a typical campaign on Zhongchou.com has a 40,000 CNY funding target, a 2,500-word description, 6 pictures and 7 perks. Only twenty-eight percent of the campaigns include a video. In terms of results, each campaign tends to collect 27,152 CNY from approximately 95 backers. Approximately 150 fans and 40 comments are achieved during the average 40-day fundraising period. Twenty-two percent of the campaigns adopt a lottery feature, and seventy-three percent of the campaigns are established in the eastern area of China.

Table 4.1 Definitions of Variables

Variable Name	Definition
Status	This is a binary dummy variable. If one project's end pledges are equal or greater than fundraising target, coded 1. And 0, otherwise.
Total_pledge	The sum of all pledges made by backers of one project at the end of its funding period.
Backers	The total backer (investor) number of one project at the end of its funding period.
Ratio	The ratio between total pledge and project goal.
Fans	The total number of fans number of one project at the end of its funding period.
Comments	The total number of comments made by initiators, investors and visitors at the end of its funding period.
Lottery	This is a binary dummy variable, coded 1 if one project has a lottery option on its webpage. And 0, otherwise.
Word	The length of the project's webpage content in words.
Video	This is a binary dummy variable. If there is a video on one project's webpage, coded 1. And 0, otherwise.
Picture	The number of pictures shown on one project's webpage.
Duration	The number of days for the funding campaign to raise funding.
Target	The amount of money that the fund seekers need.
Perk	The number of reward perks shown on one project's webpage (lucky draw is not included).
Year	This is a binary dummy variable. If one project is developed in year 2014, coded 1. And 0, otherwise.
Location Dummy	A set of dummy variables to distinguish which area one project belongs to (Northeast, East, West and Central).
Category Dummy	A set of dummy variables to distinguish which category one project belongs to (Technology, Publishing, Entertainment, Arts, Agriculture and Others).

Table 4.2 Descriptive Statistics (All Sample)

	Obs	Mean	S. D.	Min	Max
Duration	2276	38.37	19.01	10	90
Year	2276	0.34	0.48	0	1
Video	2276	0.47	0.50	0	1
Word	2276	2448.06	1538.17	585	13268
Picture	2276	6.26	6.12	1	50
Target	2276	39949.56	117862	100	3000000
Status	2276	0.60	0.49	0	1
Lottery	2276	0.22	0.42	0	1
Perk	2276	6.64	2.17	2	30
Fans	2276	149.90	382.98	0	7421
Update	2276	3.60	6.42	0	245
Comments	2276	40.43	106.54	0	2163
Backer	2276	94.74	328.70	1	8067
Total_pledge	2276	27151.57	91931.07	16	2052620
Area_Northeast	2276	0.03	0.17	0	1
Area_East	2276	0.73	0.44	0	1
Area_Central	2276	0.11	0.32	0	1
Area_West	2276	0.13	0.33	0	1
Cate_Pub	2276	0.18	0.38	0	1
Cate_Tech	2276	0.23	0.42	0	1
Cate_Agri	2276	0.25	0.43	0	1
Cate_Others	2276	0.11	0.31	0	1
Cate_Enter	2276	0.12	0.33	0	1
Cate_Arts	2276	0.11	0.31	0	1

4.3.2 Estimation Methodology

Investigating the influences of lottery treatment on crowdfunding outcomes poses a challenge for empirical study. Controlling campaign heterogeneity that may have an impact on both lottery adoption and campaign results is therefore of great importance. In a case in which an entrepreneur plans to adopt a lottery treatment in his crowdfunding campaign, we must measure the impact on the outcome of the crowdfunding campaign. An adverse selection problem may also exist when adopting a lottery treatment. Specifically, initiators of low-quality campaigns might be more likely to adopt a lottery treatment to attract more contributors because they offer potential contributors more options. The

opposite may be the case for entrepreneurs with high-quality campaigns, who may not want to use this feature because their campaigns are already attractive enough. Therefore, attributes that cannot be observed make the lottery adoption likely to correlate with campaign results. Consequently, the outcome would be biased if we use a direct estimation method to determine the relationship between lottery adoption and the results of a crowdfunding campaign. To solve this problem, we first introduce a traditional matching method (Mocan and Tekin, 2006). Consider the following equation:

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 X_i + \varepsilon_i$$

In this equation, Y_i is a dichotomous indicator of the result for the campaign i , X is a vector of the characteristics of a campaign, and D is an indicator variable for lottery treatment adoption. In traditional matching estimators, each treatment unit (campaigns with lottery), is matched to a fixed number of units with the opposite treatment (campaigns without lottery), under the assumptions of conditional independence and common support, which can be expressed as: $(Y_i=0, Y_i=1) \perp D_i | X_i, 0 < Pr(D_i = 1 | X_i) < 1$, where only $Y_i=1$ or $Y_i=0$ is observed (the campaign meets the funding target or does not meet the funding target). The treatment (lottery adoption) is random, conditional on some set of observed characteristics (X) assured by conditional independence assumption. Therefore, it is possible for “selection on observations”. Each treated unit (a campaign with lottery) can be matched with a corresponding control unit (a campaign without lottery) and is guaranteed by the common support assumption. The average treatment effect can then be explained as the mean within-match difference in the result variable between the treated and untreated units (Mocan and Tekin, 2006). However, the traditional matching method becomes problematic when the set of covariates becomes large; this may cause a serious dimensionality problem. For example, in our study, we notice that funding targets may influence both campaign results and lottery adoption. The matching strategy should be compared to the campaigns with similar targets in both treatment and control groups. However, it is nearly impossible to find exact matches for

a campaign when more variables are added into this matching process. A propensity score estimator has been tested as an effective way to solve the dimensionality problem (Garrido et al., 2014). The estimator solves this dimensionality problem by compressing many relevant factors into one single score. Individuals with similar propensity scores can then be compared between treatment and control groups. Rosenbaum and Rubin (1983) introduced propensity matching estimators to mitigate potential bias due to unobserved heterogeneity. The conditional independence and common support assumptions can be explained as: $(Y_i=0, Y_i=1) \perp D_i \mid p(X_i)$, $0 < Pr(D_i = 1 \mid p(X_i)) < 1$, where $p(X_i)$ is the propensity score, defined as the probability of receiving treatment (adopting lottery), conditional on X . Therefore, if $(Y_i=0, Y_i=1)$ and D_i are independent conditional on X_i , then they are also independent on the propensity score $p(X_i)$, because observations with the same propensity score and the full vector of covariates (X) share the same distribution (Dehejia and Wahba 1999). Therefore, the dimensionality problem has been solved by matching only a single dimension variable, $p(X_i)$.

In this paper, we implement the propensity score-matching estimator in the following steps. First, a logit regression is conducted. In this regression, the treatment (campaign adopts lottery or not), behaves as the dependent variable and the potential covariates as independent variables. The propensity score can then be obtained. We follow several principles from previous practices when selecting covariates: only variables that simultaneously influence the treatment and the outcome variable are included (Caliendo and Kopeinig, 2005). Only variables that are unaffected by treatment are included in the model. In other words, variables are either fixed over time or measured before the treatment adoption to ensure that the variable will not be influenced by the anticipation of treatment (Marco and Sabine, 2005). The data for the treatment group and the control group should come from the same sources (Heckman et al., 1999). An over-parameterized model is avoided to decrease the variance caused by non-significant variables (Lechner, 2002). In smaller datasets, only relevant covariates should be included to

decrease unnecessary “noise” into treatment effect estimates (Imbens, 2004).

Second, we check the propensity score to ensure that it is balanced across the treatment and control groups and then check whether the covariates are balanced across both groups within the strata of the propensity score. Third, a proper matching algorithm is chosen. In this paper, we apply the nearest neighbor matching (NN) algorithm with replacement. NN matching is the most straightforward matching estimator (Marco and Sabine, 2005). Matching with replacements can minimize the propensity score distance between the matched control units, and therefore can reduce bias because each treatment unit can be matched to the nearest control unit even if a control unit is used multiple times (Dehejia and Wahba 2002). Therefore, the average quality of matching will increase and the bias will decrease (Smith and Todd, 2005). Caliper matching is applied in this paper to avoid bad matches. It is conducted by introducing a tolerance level on the maximum propensity score distance (caliper). All control units with the propensity score within a certain radius from the propensity score of the treatment unit are matched. In this paper, we choose 0.05 as the caliper distance. Fourth, we test the balance of the covariates across the treatment and control groups in the matched sample. Last, we conduct regression analysis based on the new sample to test our assumption.

4.4 Results

4.4.1 Results of Propensity Score Matching (PSM)

We first run a logit regression to calculate the propensity score. In this regression, the lottery dummy is the dependent variable, and all the covariates are independent variables. To decrease bias, it is necessary to exclude irrelevant variables that may cause bias in the treatment effect estimation (Imbens, 2004). The covariates are potentially related to lottery adoption. However, it is possible that certain covariates are irrelevant to the treatment. Keeping this in mind, we run a logit regression including the following covariates: word count, video dummy, number of pictures, duration, target, number of perks, established year, category dummy and

region dummy. To filter the irrelevant variables and decrease estimation bias, we delete the insignificant covariates.

Based on our methodology, the covariates should be correlated with both lottery adoption and crowdfunding performance. Mollick (2014) analyzed market data from Kickstarter and found that video pitch, funding target and perk numbers are significantly associated with campaign performance. A longer detailed pitch narrative and more reward perks can generate high credibility, a feeling of preparedness and perfect legitimacy. However, funding target is negatively related to campaign performance. In addition, campaign category and geographical location may also influence crowdfunding performance. Similar findings are also presented by Frydrych et al. (2014) and Lehner (2014). After this procedure, six variables (*Video*, *Ln_target*, *Perk*, *Area_East*, *Area_Central* and *Cate_Pub*) are used as the final covariates for the matching process. Applying the algorithm discussed in methodology section, we match the campaigns with lottery with the ones without lottery based on their propensity score. We then check the quality of our matching. Parallel hypothesis is required when applying the propensity score matching method. The campaigns with a lottery and the campaigns without a lottery should have no significant difference in their covariates after matching.

Table 4.3 Results of Balancing Assumption

	Unmatched	Mean		Bias (%)	Reduced Bias (%)	t-test	
	Matched	Treated	Control			t-value	p-value
Video	U	0.53	0.45	14.2	47.4	2.83	0
	M	0.53	0.49	7.5		1.19	0.23
Ln_target	U	9.23	9.58	-25.1	89.6	-4.84	0
	M	9.23	9.19	2.6		0.44	0.66
Perk	U	6.94	6.55	18.1	89.5	3.58	0
	M	6.94	6.9	1.9		0.31	0.76
Area_East	U	0.78	0.72	15.4	61.7	2.99	0
	M	0.78	0.81	-5.9		-1.01	0.31
Area_Central	U	0.08	0.12	-14.4	73	-2.73	0
	M	0.08	0.07	3.9		0.71	0.48
Cate_Pub	U	0.22	0.16	15.6	84.1	3.22	0
	M	0.22	0.21	2.5		0.38	0.71

Table 4.3 shows the result of the parallel hypothesis. We use the percentage of standard error bias before and after matching as the measure to test whether the parallel hypothesis is satisfied between the treatment group and the control group. Before matching, the standard error biases of all variables are greater than 10%. The standard error bias of *Ln_target* exceeds 20%. However, after matching, all of the seven variables' biases decrease sharply, and six variables' biases are lower than 10%. We can generate similar results using the t-test. Before matching, there are significant differences between the treatment and control groups in terms of each variable's mean value. However, after matching, the differences are no longer statistically significant. Thus, we can say that the requirements for the parallel hypothesis have been satisfied. To strengthen our results, the model's goodness of fit and general significant degree are also applied to evaluate the matching effect.

The results are presented in Table 4.4. We first run a logit regression using the unmatched data. In this regression, lottery dummy is the dependent variable and the seven covariates are independent variables. In Table 4.4, we observe that the Pseudo- r^2 of the unmatched model is 0.13, which indicates that the model has a good goodness of fit level. The result of the likelihood ratio test (LR-test) enables us to reject the null hypothesis at the

1% level. The unmatched model is significant as a whole. In other words, the covariates we choose before matching can help us determine which campaign may adopt a lottery and which may not. We then run the same regression using the matched data. As a result, the Pseudo-r² decreases from 0.13 to 0.002, meaning that the covariates can no longer explain the adoption of lottery. The result of the LR-test cannot be used to reject null hypothesis. The overall model is no longer significant after matching. Specifically, the characteristic aspects of the two groups have been very similar after matching. We cannot determine whether one campaign may adopt a lottery any more simply by the covariates. Moreover, comparing the probability density of unmatched and matched propensity score in Figure 4.1, we find that the matched samples' PS densities are very close. Therefore, our model is stable based on the good matching result.

Table 4.4 The Variances of Control Group and Treatment Group Before and After Matching

Sample	Pseudo-r ²	Likelihood Ratio Test		Bias	
		chi2-value	p-value	Means	Median
Unmatched	0.13	77.31	0	17.1	15.5
Matched	0.002	2.19	0.9	4	3.3

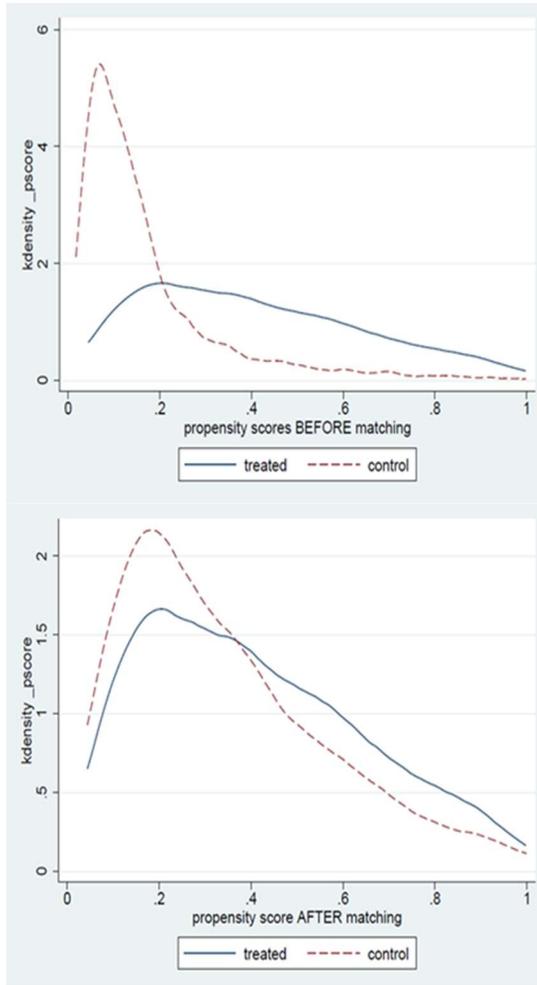


Figure 4.1 Probability Density Curves of the Propensity Score in Treatment Group and Comparison Group

Because of the high skewness of the real crowdfunding data, some of our variables are not normally distributed with long tails. We run a log transformation of all the skewed variables before our regression. The descriptive statistics and the correlation matrix of the matched sample are reported in Table 4.5 and Table 4.6.

Table 4.5 Descriptive Statistics (Matched Sample)

	Obs	Mean	S. D.	Min	Max
Status	1286	0.69	0.46	0	1
Ln_fans	1286	4.27	1.23	0	8.91
Ln_total_pledge	1286	8.80	1.77	2.77	14.53
Video	1286	0.48	0.50	0	1
Lottery	1286	0.40	0.49	0	1
Perk	1286	6.68	1.98	2	21
Year	1286	0.39	0.49	0	1
Ln_backer	1286	3.78	1.00	1.10	9.00
Ln_comments	1286	2.91	1.28	0	7.68
Ln_update	1286	1.34	0.64	0	5.51
Ln_target	1286	9.25	1.26	4.61	13.69
Ln_duration	1286	3.50	0.50	2.30	4.50
Ln_picture	1286	1.53	1.04	0	3.91
Ln_word	1286	7.63	0.57	6.37	9.47
Area_Northeast	1286	0.01	0.12	0	1
Area_East	1286	0.83	0.38	0	1
Area_Central	1286	0.06	0.25	0	1
Area_West	1286	0.09	0.29	0	1
Cate_Pub	1286	0.19	0.39	0	1
Cate_Tech	1286	0.25	0.44	0	1
Cate_Agri	1286	0.19	0.39	0	1
Cate_Others	1286	0.11	0.31	0	1
Cate_Enter	1286	0.14	0.35	0	1
Cate_Arts	1286	0.12	0.32	0	1

Table 4.6 Correlation Matrix

	1	2	3	4	5	6	7	8	9
1. Status	1								
2. Ln_fans	0.38***	1							
3. Video	0.24***	0.13***	1						
4. Year	0.19***	0.46***	0.11***	1					
5. Lottery	0.32***	0.23***	0.07**	0.22***	1				
6. Perk	0.01	0.12***	0.07***	0.05*	0.11***	1			
7. Area_NE	-0.04	-0.04	0.03	0	0.04	0.04	1		
8. Area_E	-0.05*	0.07**	-0.34***	0.03	-0.10***	-0.01	-0.26***	1	
9. Area_W	0.02	-0.07**	0.26***	-0.04	0.08***	0.02	-0.04	-0.70***	1
10. Cate_Pub	0.09***	0.26***	0.04	0.07**	0.08***	0.02	-0.02	0	-0.01
11. Cate_Tech	0.01	-0.16***	0.01	0.29***	0.01	0	0.01	-0.07**	0.05
12. Cate_Agri	-0.10***	-0.22***	-0.07**	-0.21***	-0.02	-0.05*	0.01	-0.02	0.04
13. Cate_Others	0.01	0.03	0.04	-0.06**	-0.01	0.04	0.04	-0.01	0
14. Cate_Enter	0	0.06**	0.03	-0.10***	-0.03	0.04	-0.01	0.04	-0.03
15. Ln_backer	0.310***	0.49***	0.09***	-0.01	0.04	0.11***	-0.08***	0.08***	-0.04
16. Ln_comments	0.40***	0.59***	0.09***	0.20***	0.21***	0.05	-0.02	0.01	0.03
17. Ln_update	0.71***	0.14***	0.14***	-0.25***	0.15***	0.01	0	-0.07***	0.07***
18. Ln_target	-0.20***	0.15***	0.05*	-0.02	-0.01	0.19***	-0.01	0.09***	-0.03
19. Ln_duration	-0.02	0.12***	-0.06**	-0.10***	0.07***	0.08***	0.03	-0.05*	0.03
20. Ln_picture	0.10***	0.07**	0.05*	0.06**	0.60***	0.16***	0.01	-0.08***	0.05*
21. Ln_word	0.18***	0.30***	0.11***	0.36***	0.18***	0.35***	-0.01	-0.01	0

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

Table 4.6 Correlation Matrix

	10	11	12	13	14	15	16	17	18	19	20	21
10. Cate_Pub	1											
11. Cate_Tech	-0.28***	1										
12. Cate_Agri	-0.23***	-0.29***	1									
13. Cate_Others	-0.17***	-0.20***	-0.17***	1								
14. Cate_Enter	-0.20***	-0.24***	-0.20***	-0.14***	1							
15. Ln_backer	0.02	-0.05*	-0.05*	0.05*	0.03	1						
16. Ln_comments	0.10***	0.01	-0.08***	0.05*	0	0.56***	1					
17. Ln_update	-0.05	-0.10***	0.04	0.08***	0.04	0.30***	0.34***	1				
18. Ln_target	0	-0.01	0.04	0.02	-0.03	0.29***	0.07***	-0.16***	1			
19. Ln_duration	-0.03	-0.09***	0.01	0.03	0.06**	0.07**	0.11***	0.10***	0.15***	1		
20. Ln_picture	0	-0.02	0.03	-0.01	0.02	-0.02	0.14***	0.06**	-0.05*	0.06*	1	
21. Ln_word	0.14***	0.05*	-0.17***	-0.01	-0.02	0.13***	0.09***	-0.02	0.17***	0.08***	0	1

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

4.4.2 Empirical Results

We then run regressions based on the matched sample to test our hypothesis: whether hedonic promotion strategy in reward-based crowdfunding context has a positive effect on crowdfunding success. As mentioned previously, crowdfunding success can be evaluated from different perspectives (Ahlers et al., 2015). In this paper, we use four measurements as dependent variables to evaluate crowdfunding success: campaign result dummy (*Status*), average pledge per backer (*Ln_avg_amount*), success ratio (*Ratio*) and total fans number (*Ln_fans*). These measurements evaluate crowdfunding success from two different aspects (fundraising-related success and validation-related success) based on initiators' various motivations of participating in crowdfunding (Gerber et al., 2013). The independent variable is whether a crowdfunding campaign has a lottery option on its webpage (*Lottery*). We also control a list of variables that may influence crowdfunding success. The regression results are reported in Table 4.7. Our hypothesis is tested by four models from two aspects in Table 4.7. Specifically, Models 1, 2 and 3 focus on a campaign's fundraising-related success. Validation-related success is tested by Model 4.

According to the results in Table 4.7, all four models prove that variable *Lottery* is significantly and positively related to crowdfunding success from different perspectives. For instance, Model 1 presents the results of the robust logistic regression. The dependent variable is the campaign success dummy. It shows that the variable *Lottery* has a significantly positive effect on crowdfunding success ($B=2.06, p < .01$). Furthermore, Models 2 and 3 also demonstrate similar results and indicate that the lottery feature has a positive effect on campaign results. Specifically, Model 2 demonstrates that a hedonic promotion strategy also has a positive influence on the average contributing amount per backer ($B=0.71, p < .01$). Model 3 shows the impact of hedonic features on the success ratio. The *Lottery* option also positively influences a crowdfunding campaign's success ratio ($B=0.27, p < .05$). In terms of validation-related success, similar results can be found in Model 4. The adoption of a lottery feature tends to attract more fans to a campaign if other conditions are controlled

($B=0.13, p <.05$). Therefore, the results support our hypothesis that the adoption of a lottery feature is positively related to crowdfunding success in the reward-based context. In addition, the control variables in our models also indicate consistency with previous crowdfunding research. For instance, longer description, video pitch, and more updates are positively associated with crowdfunding success. Conversely, longer duration and high target are negatively related with crowdfunding success.

4.5 Conclusions

Our work represents only a first step toward understanding crowdfunding success factors from a hedonic value perspective. We find that the adoption of a hedonic-enhancing treatment has a positive impact on crowdfunding performance. Our results contribute relevant enhancements for both academia and practice.

4.5.1 Theoretical Implications

This paper offers a unique approach to crowdfunding success factor research and advances existing literature by focusing on the impact of hedonic value through PSM-based regression analyses. Existing studies of crowdfunding success factors have primarily concentrated on a campaign's quality signal (Mollick, 2014), an initiator's social network (Mollick and Kuppaswamy, 2014) and geographical proximity (Agrawal et al., 2011). We contribute to the crowdfunding literature by revealing the relationship between crowdfunding supporters' hedonic value and crowdfunding success. Our findings prove that a campaign's hedonic value has a positive influence on campaign performance. The findings of our analysis identify new comprehensive results of reward-based crowdfunding. In addition, our work creates a better understanding of the experience goods theory (Nelson, 1970) and the consumer value theory (Babin et al., 1994) in the crowdfunding context. In addition, the theory of two types of customers in the market defined by Janiszewski (1998) is also reflected in our research.

Table 4.7 Regression Results

	Model 1	Model 2	Model 3	Model 4
	Status	Ln avg amount	Ln fans	Ratio
Lottery	2.06*** (0.35)	0.71*** (0.08)	0.13** (0.06)	0.27** (0.12)
Perk	-0.18*** (0.06)	-0.02 (0.02)	0.02* (0.01)	-0.01 (0.03)
Ln_word	0.84*** (0.24)	0.18*** (0.07)	0.08* (0.05)	0.21* (0.13)
Ln_picture	-0.28* (0.15)	-0.11*** (0.04)	-0.06** (0.03)	0.02 (0.05)
Ln_duration	-0.69*** (0.25)	-0.05 (0.07)	0.14*** (0.05)	-0.10 (0.09)
Ln_target	-0.51*** (0.11)	0.46*** (0.03)	0.12*** (0.02)	-0.31*** (0.06)
Video	1.29*** (0.30)	0.21*** (0.07)	0.05 (0.05)	0.08 (0.11)
Ln_update	5.72*** (0.50)	0.99*** (0.07)	0.16*** (0.04)	0.56*** (0.10)
Ln_comments	0.33*** (0.12)	-0.07** (0.03)	0.43*** (0.02)	0.56*** (0.09)
Area_Northeast	-0.24 (0.82)	0.14 (0.27)	-0.08 (0.22)	-0.12 (0.30)
Area_East	1.76*** (0.53)	0.08 (0.12)	0.20*** (0.08)	0.17 (0.23)
Area_Central	1.64** (0.73)	-0.02 (0.15)	0.24** (0.10)	0.05 (0.25)
Cate_Pub	0.82 (0.54)	0.27** (0.11)	0.02 (0.08)	-0.03 (0.18)
Cate_Tech	-0.51 (0.53)	0.08 (0.11)	-1.02*** (0.08)	0.03 (0.16)
Cate_Agri	-0.53 (0.51)	-0.16 (0.12)	-0.69*** (0.08)	-0.21 (0.15)
Cate_Others	-0.71 (0.60)	-0.08 (0.13)	-0.38*** (0.09)	-0.24 (0.17)
Cate_Enter	0.11 (0.53)	-0.01 (0.13)	-0.14* (0.08)	-0.07 (0.20)
Year	2.41*** (0.35)	0.83*** (0.08)	1.06*** (0.06)	0.26** (0.10)
Cons	-8.21*** (2.12)	-2.04*** (0.54)	0.39 (0.37)	0.41 (0.92)
N	1286	1286	1286	1286
Pr2/r2	0.75	0.42	0.62	0.26
Wald chi2/F	276.27	47.88	122.61	17.97

Note: Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

4.5.2 Practical Implications

Our results also have practical implications for entrepreneurs who are considering the use of crowdfunding. Entrepreneurs can use our findings, particularly regarding hedonic value, to increase the probability of a successful funding campaign. Hence, in addition to explaining their campaign ideas and presenting themselves as sympathetic and trustworthy, entrepreneurs also must satisfy contributors' hedonic motivation by including features such as pleasure, feeling, aesthetics, emotion, and enjoyment in their campaigns (Tauber, 1972). Hedonic value features can attract not only utilitarian- motivated contributors but also hedonic-motivated contributors. For instance, with regard to exploration-oriented contributors, it is appealing to determine whether crowdfunding campaigns are concentrated on a high level of hedonic value via the implementation of entertaining elements such as lottery features. Such hedonic features can raise interest and create desire to participate. For goal-oriented contributors, the accentuation of hedonic value can entertain their process for gaining material return (Janiszewski, 1998). Crowdfunding platforms also can use our findings to optimize the process and support a successful crowdfunding campaign. Crowdfunding platforms are the intermediary that connects contributors and entrepreneurs (Hemer, 2011). If a crowdfunding platform cannot attract enough potential contributors, higher failure rates occur and may result in a loss of confidence in crowdfunding market. However, hedonic-oriented promotion strategy offers a new business model for crowdfunding platforms. Therefore, it will be beneficial for crowdfunding platforms to design hedonic-based features into their platform to boost platforms' popularity and performance.

4.5.3 Limitations and Future Research

The empirical results of our study demonstrate the impact of hedonic value on the success of crowdfunding campaigns. However, this study has several limitations. First, because of a lack of proper data, our research is based only on a limited sample size, which may make our findings lack objectivity and universality. In addition, our study shows only the impact

of hedonic values on reward-based crowdfunding success; more research is needed to extend our insights. For instance, conducting similar studies using donation-based or equity-based crowdfunding platform data may generate interesting results. Next, the PSM procedure assumes that given the equality of campaigns' observable attributes, campaigns differ in their choice of promotion strategies for reasons that are not correlated with the outcome. The procedure is reliable to the extent that campaigns' unobservable attributes do not directly influence promotion strategy choice. However, the unobservable variables are more or less likely to influence hedonic promotion strategy adoption. As a result, bias problems are not mitigated if unobservable variables that influence hedonic promotion adoption also affect the campaign success (Mocan and Tekin, 2006). Additionally, for future study, comparative studies can further investigate the impact of our findings. Maheswaran and Shavitt (2014) note the importance of understanding the cultural context for consumer behavior research in an increasing globalized marketplace. We believe that cultural factors significantly influence consumers' behavior. Our findings are based only on data from a Chinese reward-based crowdfunding platform. Therefore, whether the results of this study can be used to explain other regions' crowdfunding practice remains uncertain. It is also interesting to examine whether our findings will be suitable for other crowdfunding models (equity-based, loan-based and donation-based). At this point, our study is meaningful by offering a new angle to understand crowdfunding success, but a more comprehensive study is needed to increase the generalizability of our findings. Future studies can be extended by using a multi-country crowdfunding data sample from both Western and Eastern cultures, including horizontal comparisons among different crowdfunding models. In this case, we can understand how different cultural backgrounds moderate contributors' crowdfunding participation behavior, and then offer appropriate promotion strategies for different crowdfunding practices.

To conclude, our quantitative research approach reveals evidence of the impact of hedonic value on the success of crowdfunding campaigns based on a PSM-based empirical study. In general, our findings suggest that the

hedonic value of a crowdfunding campaign has a positive impact on its funding success. The hedonic feature of a crowdfunding campaign not only helps entrepreneurs achieve their funding targets but also offers them more fans, more backers, more comments (thereby creating a community around their campaign), more total pledges, and higher success rates. The findings of our study are relevant to crowdfunding researchers and valuable to crowdfunding practitioners seeking to increase future campaign performance.

Chapter 5. Do Not Teach Fish to Swim! - The Backfire Effect of Providing Rewards on Prosocial Crowdfunding Campaign Performance

Abstract

This paper explores the influences of offering tangible rewards on prosocial crowdfunding outcomes. To solve perceived self-selection problems, campaigns with and without tangible rewards are matched by applying the propensity score matching (PSM) method. Analyzing a unique matched dataset from a Chinese crowdfunding platform, the findings show that the presence of a tangible reward is negatively associated with the success and performance of prosocial campaigns. Notably, rewards lead to a lower probability of success, fewer contributors, a lower funding amount and a lower completion ratio. In addition, more tangible reward options exacerbate the negative impact. The findings offer meaningful insights for both theory and practice.

* A previous version of this chapter was submitted to *Business & Society*, which is currently under review.

5.1 Introduction

Crowdfunding is an innovative way to obtain entrepreneurial fundraising through hybrid logic. The logic behind crowdfunding includes the combination of social exchange and financial sustainability (Battilana and Lee, 2014). Crowdfunding collects small individual contributions to fund different types of projects via online crowdfunding platforms. Because of the participation of information technology in the crowdfunding process, the costs of coordination and transaction in crowdfunding are much lower than those in traditional fundraising channels (Choy and Schlagwein, 2015).

The possibilities of financing commercial projects via crowdfunding have been explored by numerous scholars (e.g., Bradford, 2012; Bretschneider et al., 2014; Kuppuswamy and Bayus, 2015; Rossi, 2014; Schenk and Guittard, 2011; Belleflamme et al., 2010; Ordanini et al., 2011; Agrawal, Catalini et al., 2015; Mollick, 2014). In addition to commercial projects, crowdfunding is also applicable for funding prosocial purposes. In particular, donation-based crowdfunding has been considered as a proper model to support prosocial activities (Gerber and Hui, 2013). For instance, previous literature indicates the legitimacy and feasibility for financing social entrepreneurship (SE) via donation-based crowdfunding (Lehner, 2013). Although donation-based crowdfunding can be used to support prosocial campaigns, the reason why donation-based crowdfunding is a proper model for financing prosocial purposes is still theoretically ambiguous and empirically unsettled. This question becomes more interesting by considering the perceived “free-rider” problem (Samuelson, 1954) lurking in donation-based crowdfunding. Previous literature on charitable giving mentions that the “free-rider” problem can be solved by offering extrinsic motivations to donors (e.g., Friedman and McAdam, 1992). In terms of crowdfunding, tangible rewards are considered to be a common way to extrinsically motivate contributors (Gerber and Hui, 2013). Therefore, it is meaningful to determine whether tangible rewards can be used to alleviate the “free-rider” problem by exploring the relationship between tangible rewards and prosocial campaign outcomes. More generally, this paper answers the question: Is reward-based a better

crowdfunding model for financing prosocial campaigns compared to the donation-based model? Because previous crowdfunding research has paid little attention to this question, this study aims to fill this research gap.

Based on the cognitive evaluation theory (Deci and Ryan, 1985), the perceived “free-rider” problem can be solved automatically by satisfying donors’ enjoyment, competence and autonomy (Deci and Ryan, 1985). In addition, in the prosocial context, extrinsic motivations weaken the positive signal value of performing prosocial activities (Benabou and Tirole, 2003; Titmuss, 1971). Therefore, extrinsic motivations will backfire instead of adding up to intrinsic motivations via a “crowding-out” mechanism (Deci and Ryan, 1985; Frey, 1997; Lepper and Greene, 1978). Similarly, in the prosocial crowdfunding context, it might be the case that offering tangible rewards to prosocial campaigns may crowd out donors’ intrinsic motivations to contribute. The “over-justification effect” and “need for autonomy effect” are two possible explanations to clarify the mechanism behind the “crowding-out” phenomenon. As a result, tangible rewards tend to be negatively associated with prosocial crowdfunding outcomes. In other words, a reward-based model may not be suitable for financing prosocial campaigns via crowdfunding when compared to the donation-based model.

To test the hypotheses, an empirical study is conducted using the Chinese crowdfunding platform Zhongchou, (www.zhongchou.com), the largest reward-based crowdfunding platform in China. On this special reward-based platform, non-profit prosocial campaigns are also accepted. Entrepreneurs can offer tangible rewards to their prosocial campaigns in addition to the common intangible rewards. Because of these special features, this platform offers the ideal ground in which to test the hypotheses. Noting the perceived endogeneity bias due to the self-selecting process of offering tangible rewards in prosocial campaigns, a propensity score matching (PSM) method is used to “refine” the data. Based on the “refined” sample, the influence of tangible rewards on the outcomes of prosocial campaigns are examined by including the presence of tangible rewards and the number of tangible rewards as independent

variables. After further robustness checks, significant evidence shows that tangible rewards crowd out intrinsic motivations in the prosocial crowdfunding context. In particular, the presence of tangible rewards is negatively associated with the success of prosocial crowdfunding campaigns. The rewards also reduce a campaign's total backer number, total pledge amount and completion ratio. In addition, the negative impacts become stronger if more tangible rewards are offered in prosocial campaigns. These findings empirically confirm that the reward-based model may not be an ideal model for supporting prosocial purposes.

This paper offers meaningful contributions to the literature. First, this research enriches the emerging literature stream on financing prosocial entrepreneurship via crowdfunding in general. Second, this study contributes to the social entrepreneurship financing literature by demonstrating that reward-based crowdfunding may not be a proper fundraising channel for prosocial campaigns when compared to donation-based crowdfunding. Third, this paper extends the application of cognitive evaluation theory in the prosocial crowdfunding context.

The paper is structured as follows. Based on the literature review and theoretical analysis, the research hypotheses are presented in the next section. The research data and methodology are then explained in detail. Next, the empirical results are discussed. Key findings, implications and future research directions are presented in the final section.

5.2 Literature Review and Hypotheses

5.2.1 Supporting Social Entrepreneurship (SE) Through Crowdfunding

Fundraising is a vital step in entrepreneurial activities (Florin et al., 2003). However, because of the “liability of newness” (Stinchcombe, 1965), new ventures have more difficulty attracting financial resources from external suppliers than established companies do. In non-profit social entrepreneurship (SE), the situation is even worse (Lehner, 2013). Non-profit SE is defined as the prosocial entrepreneurial activities conducted by start-ups or entrepreneurs to develop, fund and offer solutions to social, cultural or environmental issues such as poverty alleviation, health care

and community development (Dees, 1998). Based on its definition, non-profit SE aims to create public goods instead of private products or services. Compared to commercial ventures, non-profit SE lacks a clear financial target (Dacin et al., 2010; Moss et al., 2011). In addition, non-profit SE is rooted in the social sphere, which leads to the inference of a lack of managerial abilities (Lehner, 2013). These “disadvantages” suggest that non-profit SE may not easily mitigate its finance gap through traditional fundraising means (Fedele and Miniaci, 2010). Therefore, it is necessary in non-profit SE to find alternative fundraising channels.

As an innovative way to approach entrepreneurial fundraising, crowdfunding collects small individual contributions to support entrepreneurial campaigns via online platforms. Thus, crowdfunding is a suitable channel for financing non-profit SE. It is the social features that make crowdfunding different than other traditional financing channels (Wash and Solomon, 2014). Crowdfunding as a social fundraising tool matches non-profit SE well in theory (Dart, 2004). In addition, information technology has largely decreased the costs of coordination and transaction, which facilitates the funding of prosocial campaigns via online crowdfunding platforms (Choy and Schlagwein, 2015). Among different crowdfunding models, donation-based crowdfunding is the most suitable and common model for financing non-profit prosocial campaigns (Lehner, 2013). In addition to general crowdfunding features, donation-based crowdfunding provides extra legitimacy to prosocial campaigns through the “*per se* democratic” selecting process, which guarantees that the crowd will choose to support the most needed prosocial campaigns (Drury and Stott, 2011). Donation-based crowdfunding enables individuals to produce public goods collectively by donating to prosocial campaigns. For illustration, DonorsChoose.org, a donation-based crowdfunding platform, has successfully supported public school teachers by effectively raising funds for education campaigns (Meer, 2014).

5.2.2 Perceived Free-rider Problem in the Prosocial Context

A public good is a good that everyone has equal access to use and that no one can prevent others from consuming. An individual’s consumption of

a public good will not decrease others' enjoyment of it. These two features of public goods can be summarized as non-rivalrous and non-excludable (Samuelson, 1954). Based on the definition of public goods, the products of prosocial crowdfunding campaigns can be treated as public goods because the products are goods with broad public benefits (Carr, 2013). Based on Olson's (1965) collective-action model, in terms of donation-based crowdfunding, the fundraising process can be interpreted as contributors collectively establishing a "common pool" through donations for the provision of public goods without compensation.

However, as a practice involving the private provision of public goods, donation-based crowdfunding may suffer from the "free-rider" problem, which has long been considered the major problem in this area (Samuelson, 1954). It describes the situation in which individuals may not want to contribute to public goods because they believe that others will contribute and they can consume public goods for free (Samuelson, 1954). If being a "free-rider" becomes the common strategy when individuals face situations of private contribution to public goods, no public goods will be produced (Kim and Walker, 1984). For example, a campaign for environmental improvement from a donation-based crowdfunding platform aims to create better environmental conditions for all human beings. As the campaign's product, the improved environmental condition can be consumed by everyone, even those that do not donate to this campaign. As a result, the campaign may fail and no public goods will be produced. The "free-rider" problem tends to be negatively associated with the outcomes of prosocial campaign fundraising. Therefore, it is crucial to solve the "free-rider" problem for successful fundraising.

Previous collective action literature suggests that the "free-rider" problem can be alleviated if individuals' utility is not only derived from the public goods but also from individuals' own contributions (Friedman and McAdam 1992; Harbaugh, 1998; Oliver, 1980). Similarly, offering tangible rewards based on individuals' contributions may act as a possible solution to solve the "free-rider" problem in donation-based crowdfunding. Therefore, it is meaningful to test whether tangible rewards can be used to

solve the “free-rider” problem and promote crowdfunding performance. Further, this question can be generalized as the following: Is reward-based crowdfunding a more suitable model than the donation-based model to finance prosocial campaigns? To answer this question, it is crucial to determine what makes contributors invest their money in prosocial crowdfunding campaigns. Motivation theory (Murray, 1964) offers a useful perspective to review and answer this question.

5.2.3 Contributors’ Motivations in Supporting Prosocial Crowdfunding Campaigns

Motivation is the inner state that directs and stimulates human behavior (Murray, 1964). Vallerand (1997) describes motivation as the engine for individuals’ satisfaction of physiological needs. Deci and Ryan (2000) categorize individuals’ motivations into intrinsic motivations and extrinsic motivations in cognitive evaluation theory (Deci and Ryan, 1985). According to Deci and Ryan (2000), an activity is considered to be intrinsically motivated if it reveals the reward itself or meets an individual’s primary psychological needs. Conversely, an activity is extrinsically motivated if it focuses more on external rewards or final results. In general, contributors support crowdfunding campaigns for both intrinsic and extrinsic motivations. Contributors are primarily motivated by collecting rewards, helping others, supporting causes or being part of a community (Gerber and Hui, 2013). In particular, contributors are considered to be extrinsically motivated if they contribute to collect rewards. For example, contributors to commercial crowdfunding campaigns are motivated by collecting future products (Allison et al., 2015). Conversely, contributors are considered to be intrinsically motivated if they contribute to help others, support causes or be part of a community. For instance, contributors to prosocial crowdfunding campaigns tend to be intrinsically motivated because they are willing to contribute even without external incentives.

Compared to commercial campaign contributors, prosocial campaign contributors are more likely to be intrinsically motivated. They are willing to contribute to prosocial campaigns to alleviate social problems or help

non-profit organizations based on pure altruism (Gerber and Hui, 2013; Ordanini et al., 2011). They may also enjoy the “warm glow” (Harbaugh, 1998) from contributing based on a philanthropic cause. In addition, an individual’s sense of guilt plays a significant role in contributing to prosocial campaigns (Hibbert et al., 2007). Sitting on the sidelines will evoke the moral pressure of not helping, which will cause this sense of guilt. Guilt has negative effects on the satisfaction of personal utility (Elster, 1998). In addition, an individual’s empathy also matters (Gerber and Hui, 2013; Ordanini et al., 2011; Colombo et al., 2015). For example, contributors may be motivated by fairness concerns toward the individuals in need of help. These concerns tend to generate empathy based on contributors’ inequity aversion. The empathy intrinsically motivates contributing behavior (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000). To sum up, prosocial campaign contributors are intrinsically motivated. They contribute to enhance their personal utilities by satisfying pure altruism, savoring the “warm glow”, alleviating the guilty feeling and satisfying empathy (Dufwenberg, 2002).

5.2.4 The Effects of Extrinsic Motivations on Support for Prosocial Activities

As discussed previously, individuals’ contributing behavior in prosocial campaigns stems from intrinsic rather than extrinsic motivations. Contributors participate to help others, support a cause or be part of a community (Gerber and Hui, 2013). In addition, they award themselves with enjoyment, competence and autonomy by performing the donation behavior (Deci and Ryan, 1985). Enjoyment, competence and autonomy are intangible rewards that act as selective incentives (Oliver, 1980) for contributing to prosocial campaigns. They explain why contributors are willing to contribute even without any materialized compensation. For instance, contributors feel happy if the campaigns they support are working well because they have made tangible influences to alleviate the problems. They are willing to contribute for the happiness although no compensation is offered for the contributions. To sum up, donating behavior itself can offer several intangible rewards exclusively for contributors. Specifically, contributors inherently gain enjoyment,

competence and autonomy as rewards attached to their contributing behavior. These benefits are exclusive to contributors but not to “free-riders”. Therefore, these exclusive awards as selective incentives (Oliver, 1980) tend to alleviate the “free-rider” problem lurking in prosocial crowdfunding. Therefore, offering extra extrinsic motivations (tangible rewards) to alleviate the “free-rider” problem may be no longer necessary.

Notably, offering tangible rewards in prosocial crowdfunding campaigns can be harmful. Extrinsic motivations and intrinsic motivations are totally incompatible. In particular, the introduction of extrinsic motivation may decrease an individual’s intrinsic motivation level. This is called the “crowding-out” effect of extrinsic motivations on intrinsic motivations (Greene and Lepper, 1974; Deci et al., 1999; Gneezy and Rustichini, 2000; Frey and Jegen, 2001; De Charms, 2013; Deci, 1976; Frey, 1993). The “crowding-out” effect can be relatively strong in prosocial contexts because participants in prosocial activities are intrinsically motivated (Bacchiaga and Borzaga, 2003; Leete, 2000). For instance, individuals tend to behave less rather than more generously in charitable giving if materialized or monetary rewards are offered as extrinsic motivations (Newman and Shen, 2012). Similar results can be found in blood donations (Titmuss, 1971; Mellström and Johannesson, 2008), charitable donations (Newman and Shen, 2012), volunteering work (Carpenter and Myers, 2010) and collective prosocial activities (Frey and Oberholzer-Gee, 1997). In terms of prosocial crowdfunding, a type of prosocial activity, contributors are intrinsically motivated. Therefore, offering tangible rewards as extrinsic motivations will crowd out intrinsically motivated contributors’ willingness to contribute. As a result, offering tangible rewards as extrinsic motivations tends to be negatively associated with the outcomes of prosocial crowdfunding campaigns. The mechanism behind it can be explained further by two effects: the “over-justification” effect and the “need for autonomy” effect.

The over-justification effect (Lepper, Greene and Nisbett, 1973) is derived from attribution theory (Kelly, 1967) and self-perception theory (Bem, 1972). According to the over-justification effect, if an activity is

intrinsically motivated, introducing extrinsic motivations may cause a decrease in intrinsic motivations, because extrinsic motivations bring too many choices (justifications) for performing the activity (Lepper, 1981). Specifically, the introduction of external motivations shifts a previous intrinsically motivated activity into an extrinsically motivated activity, which undermines individuals' pre-existing intrinsic motivations to conduct the activity. In terms of contributing to prosocial crowdfunding campaigns, offering tangible rewards may shift the meaning of contributing from caring about social welfare into collecting rewards. Contributors may feel that they are influenced by an economic mindset instead of a prosocial altruistic mindset if tangible rewards are offered as extrinsic motivations in prosocial crowdfunding campaigns (Gneezy and Rustichini, 2000; Heyman and Ariely, 2004). This shift may taint contributors' prosocial behavior (Heyman and Ariely, 2004). In addition, it is reasonable to assume that more tangible reward options will strengthen the "over-justification" effect.

According to self-determination theory, Deci and Ryan (1985) propose that individuals have intrinsic needs for autonomy. Autonomy describes whether an individual's behavior is self-determined (De Charms, 2013). Individuals' intrinsic motivations tend to be influenced by the satisfaction of innate needs. If this is the case, the introduction of extrinsic motivations will diminish individuals' intrinsic motivations to perform tasks (Deci et al., 1999). In terms of prosocial crowdfunding, it is reasonable to propose that potential contributors to prosocial campaigns will feel less likely to donate if they notice that tangible awards have been offered as the perceived rewards for contributing. These tangible rewards diminish the satisfaction of autonomy by adding extra control (Deci and Ryan, 1985). Contributors' intrinsically motivated contributing behavior will be disrupted by the controlling effect caused by offering extrinsic rewards. The degree of controlling effect is positively associated with the number of tangible rewards.

Based on the previous discussion, we propose the following hypotheses:

H₁: The presence of a tangible reward is negatively associated with the success of a prosocial crowdfunding campaign.

H₂: The presence of a tangible reward is negatively associated with the performance of a prosocial crowdfunding campaign.

H₃: The total number of tangible rewards in a prosocial crowdfunding campaign is negatively associated with the performance of a prosocial crowdfunding campaign.

5.3 Data and Variables

5.3.1 Data

The data were collected from Zhongchou (www.zhongchou.com), the largest reward-based crowdfunding platform in mainland China. Similar to other reward-based crowdfunding platforms, Zhongchou follows an “all-or-nothing” strategy for campaign initiators and contributors. This strategy means that participants can only gain what they want (money or rewards) when campaigns successfully reach their funding goals. However, as a special reward-based platform, Zhongchou has unique features. On this platform, in addition to commercial campaigns, non-profit prosocial campaigns are also accepted. These prosocial campaigns are listed under the category “prosocial crowdfunding” and are separated from the original commercial reward-based campaigns. As a reward-based crowdfunding platform, every prosocial campaign must offer at least one reward option for backers to choose. To promote backers’ engagement and attract more backers to contribute, the form of reward is not limited to intangible rewards. Specifically, the rewards can be tangible, intangible or both. An intangible reward is a common approach for prosocial campaigns because the campaigns aim to produce public goods for the entire society rather than private goods for individuals. Intangible rewards usually take the forms of virtual hugs or thank-you e-mails. In this case, prosocial campaigns that only offer intangible rewards can be treated as donation-based crowdfunding campaigns; donors are given no tangible compensation, which is similar to the original donation-based crowdfunding model. It is also possible to offer tangible rewards in

campaigns. Similar to the original reward-based crowdfunding model, tangible rewards take the forms of campaign-related personal recognition souvenirs (Kuppuswamy and Bayus, 2015) such as t-shirts or mugs with campaign logos. The special setting of Zhongchou offers an ideal ground in which to test the hypotheses. The final dataset contains 2,167 campaigns posted on Zhongchou in a one-year period from January 2016 to December 2016 in the category of prosocial crowdfunding. The unfinished campaigns are excluded, along with the error campaigns and cancelled campaigns. Before collecting campaign-based information, we check the introductions of the campaigns to ensure that all the campaigns in the initial sample aim to create public goods. For each campaign in the dataset, the following information is collected: funding target; sub-category; post time; location; description length; duration; reward levels; reward description; introduction video or not; picture number; total pledge; final backer number; final status and final completion ratio.

5.3.2 Variables

The dependent variables, independent variables and control variables are coded based on the collected information.

In terms of dependent variables, Ahlers et al. (2015) suggest that the outcome of a crowdfunding campaign is a multifaceted concept and should be evaluated by multiple standards. Based on the suggestions from previous literature (e.g., Cumming et al., 2014), four dependent variables from two perspectives are used to measure the outcomes of prosocial crowdfunding campaigns. In particular, *Status* measures crowdfunding outcomes from the status perspective and *Backer_num*, *Total_pledge* and *Completion_ratio* measure crowdfunding outcomes from the performance perspective. *Status* is a binary dummy variable that describes the final status of a prosocial crowdfunding campaign. It takes a value of 1 if a campaign reaches its funding target successfully and a value of 0 if fundraising falls short. *Backer_num* is used to represent the total number of contributors in a prosocial campaign. In addition, *Total_pledge* represents a campaign's total amount of money collected at the end of its fundraising period. *Completion_ratio* measures the accomplishing degree

of a campaign and is calculated by taking the ratio of *Total_pledge* and *Target*.

For independent variables, based on the reward descriptions of the campaigns, a campaign is coded as “donation-based” if only intangible rewards can be found in its reward descriptions. Similarly, a campaign is coded as “hybrid” if both tangible and intangible rewards are described. A campaign is coded as “reward-based” if only tangible rewards can be found in its reward descriptions. As a result, 202 “hybrid” campaigns, 1,965 “donation-based” campaigns and 0 “reward-based” campaigns are collected. The campaigns with tangible rewards account for 9.32% of the entire sample. A binary dummy variable *Tangible_reward_dummy* is used to represent whether a prosocial campaign has adopted tangible rewards. If a campaign is “hybrid”, it is coded 1, and 0 otherwise. In addition, *Tangible_reward_num* as the other independent variable was used to indicate the number of tangible rewards of a “hybrid” campaign.

Regarding control variables, prior literature indicates that campaign quality is positively related to crowdfunding outcomes (Mollick, 2014). A campaign has a higher probability of success if it offers more campaign-related information as quality signals. Detailed campaign descriptions, more descriptive pictures about the campaign and descriptive video pitches are three common quality signals in crowdfunding campaigns (Mollick, 2014; Ahlers et al., 2015; Colombo et al., 2015), because information asymmetry is alleviated by the supply of extra information. Extra campaign-related information is also important for contributors to understand prosocial campaigns, suggesting that these quality signals may also be valid for prosocial campaigns. Therefore, *Video*, *Pic_num* and *Wordcount* are used as control variables in this paper. *Video* is a binary dummy variable. If there is a descriptive video on a campaign webpage, it is coded 1, and 0 otherwise. *Pic_num* describes the total number of pictures posted on a campaign’s webpage. *Wordcount* represents the length of a campaign’s descriptive content in Chinese characters. In addition, other factors that tend to influence the outcomes of crowdfunding campaigns are also controlled, including *Location*,

Sub_category, *Target*, *Duration*, *Month* and *Intangible_reward_num*. Due to the high skewness of real crowdfunding data, some of the non-dummy variables are not normally distributed with long tails. To satisfy asymptotic normality and increase prediction accuracy, the natural log transformations of all the skewed variables are conducted before conducting regressions. The definitions of variables are summarized in Table 5.1. Table 5.2 reports the descriptive statistics of all variables.

Table 5.1 Definitions of Variables

Independent Variable	Definition	Variable Type
Tangible_reward_dummy	1-a campaign offers tangible rewards as crowdfunding perks, 0-otherwise	Dummy
Tangible_reward_num	Total number of the tangible rewards of a campaign	Continuous
Control variable	Definition	Variable Type
Ln_target	Natural log-transformed fundraising goal of a campaign (in RMB)	Continuous
Ln_duration	Natural log-transformed fundraising duration (in days)	Continuous
Video	1-a campaign includes a video on its web pitch, 0-otherwise	Dummy
Pic_num	Number of pictures a campaign used to describe the project	Continuous
Intangible_reward_num	Total number of intangible rewards of a campaign	Continuous
Ln_wordcount	Natural log-transformed number of total Chinese characters in a campaign's description	Continuous
Sub_category	1-Environment, 2-Poverty, 3-Education, 4-Society, 5-Charity, 6-Youth	Dummy
Month	A series of dummy variables to show the month in which a campaign is established	Dummy
Location	A series of dummy variables to show the region where a campaign is established(1-Northeast,2-East,3-Central,4-West)	Dummy
Dependent variable	Definition	Variable Type
Status	1-campaign successfully funded, 0-otherwise	Dummy
Ln_backer_num	Natural log-transformed total number of backers a campaign received	Continuous
Ln_total_pledge	Natural log-transformed total money raised for a campaign (in RMB)	Continuous
Completion_ratio	The ratio between campaign's total pledge and campaign's funding target	Continuous

Table 5.2 Descriptive Statistics (All Sample)

Variable	Obs	Mean	S. D.	Min	Max
Tangible_reward_dummy	2167	0.09	0.29	0.00	1.00
Tangible_reward_num	2167	0.70	2.33	0.00	13.00
Ln_target	2167	9.52	1.37	6.91	13.82
Ln_duration	2167	3.52	0.51	2.30	4.50
Video	2167	0.28	0.45	0.00	1.00
Pic_num	2167	6.18	6.04	1.00	50.00
Intangible_reward_num	2167	1.31	1.08	1.00	4.00
Ln_wordcount	2167	7.63	0.58	6.37	9.49
Status	2167	0.61	0.49	0.00	1.00
Ln_backer_num	2167	3.81	1.01	0.69	9.00
Ln_total_pledge	2167	8.73	1.87	2.77	14.53
Completion_ratio	2167	1.23	2.00	0.00	27.25
Region_1	2167	0.03	0.16	0.00	1.00
Region_2	2167	0.73	0.44	0.00	1.00
Region_3	2167	0.11	0.32	0.00	1.00
Region_4	2167	0.13	0.33	0.00	1.00
Category_1	2167	0.18	0.38	0.00	1.00
Category_2	2167	0.24	0.43	0.00	1.00
Category_3	2167	0.25	0.44	0.00	1.00
Category_4	2167	0.11	0.31	0.00	1.00
Category_5	2167	0.12	0.33	0.00	1.00
Category_6	2167	0.10	0.30	0.00	1.00

5.4 Models and Methodology

5.4.1 Models

The hypotheses of this paper will be tested by three models.

$$\text{Model 1: } Status_i = \beta_0 + \beta_1 \text{Tangible_reward_dummy}_i + \beta_2 \text{Control_variables}_i + \varepsilon_i$$

Model 1 will determine whether the presence of tangible rewards (*Tangible_reward_dummy*) is negatively associated with the result (*Status*) of a prosocial crowdfunding campaign.

$$\text{Model 2: } Y_i = \beta_0 + \beta_1 \text{Tangible_reward_dummy}_i + \beta_2 \text{Control_variables}_i + \varepsilon_i$$

In Model 2, the way in which a tangible reward (*Tangible_reward_dummy*) influences prosocial crowdfunding campaign performance (*Backer_num*, *Total_pledge* and *Completion_ratio*) will be tested.

$$\text{Model 3: } Y_i = \beta_0 + \beta_1 \text{Tangible_reward_num}_i + \beta_2 \text{Control_variables}_i + \varepsilon_i$$

Model 3 will test how the number of tangible rewards (*Tangible_reward_num*) affects prosocial campaign performance (*Backer_num*, *Total_pledge* and *Completion_ratio*).

In all the three models, i indicates the prosocial crowdfunding campaign. $Status_i$ is a binary dummy variable representing whether campaign $_i$ reached its funding target (Yes=1, No=0). Y_i is a series of dependent variables indicating a campaign $_i$'s performance, including *Backer_num*, *Total_pledge* and *Completion_ratio*. *Tangible_reward_dummy $_i$* is a binary dummy variable indicating whether a campaign $_i$ offers a tangible reward (Yes=1, No=0). *Tangible_reward_num $_i$* is a continuous variable indicating the number of tangible rewards of a campaign $_i$. *Control_variables $_i$* is a list of variables that may be associated with a campaign $_i$'s outcomes, including *Video*, *Pic_num*, *Wordcount*, *Location*, *Sub_category*, *Target*, *Duration*, *Month* and *Intangible_reward_num*.

5.4.2 Methodology

To test the hypotheses, the outcomes between campaigns' "hybrid" group and "donation-based" group should be compared. The prerequisite for this comparison, the adoption of tangible rewards, is randomly assigned by different campaigns. However, the adoption of tangible rewards seems to be a self-selection process, which may cause endogenous problems. In particular, it is reasonable that a campaign initiator is more eager to offer tangible rewards to promote fundraising if he/she does not hold much confidence in his/her campaign. If the self-selection problem exists, the results may be seriously biased due to endogeneity. For example, it is no longer possible to draw the conclusion that the poor outcomes of a campaign are caused by offering tangible rewards, because the poor quality of the campaign may also cause poor outcomes. Therefore, the

pure effect of offering tangible rewards on campaign outcomes may be confounded by campaign quality, or more generally, by campaigns' inborn features. It seems that a prosocial campaign's inborn features are associated with both the probability of offering tangible rewards and campaign outcomes. To solve the endogeneity bias due to self-selection, a propensity score matching (PSM) method (Dehejia and Wahba, 2002) is conducted in this paper. The function of PSM is to match campaigns with tangible rewards (treatment group) to campaigns without tangible rewards (comparison group) to create counterfactuals for campaigns in the treatment group.

Specifically, the PSM method uses a campaign's inborn features to estimate the campaign's probability of adopting tangible rewards. The probability is defined as the campaign's propensity score. Campaigns' propensity scores offer effective ways to balance the different campaign features in the treatment and comparison groups. Based on campaigns' propensity scores, every campaign in a treatment group can find one (or more) matched campaign(s) with similar propensity score(s) in a comparison group. After this matching process, the results will no longer be biased because all the confounded variables are controlled by the propensity scores. It is then possible to estimate the pure effect of the treatment (offering tangible rewards) on campaign outcomes. Campaigns' propensity scores can be calculated using a logit regression. In this regression, the dependent variable is whether a campaign offers tangible rewards (*Tangible_reward_dummy*) and the independent variables are the campaign's inborn features (*Video*, *Pic_num*, *Wordcount*, *Location*, *Sub_category*, *Target*, *Duration* and *Month*). Inborn features are ideal covariates because the features relate not only to the treatment but also to campaign outcomes. In addition, they are fixed over time and remain unchanged after introducing treatment (Caliendo and Kopeinig, 2008). The regression results are presented in Table 5.3. As expected, campaigns with short introductions, fewer pictures and no videos are significantly associated with the adoption of tangible rewards, meaning that campaigns of lower quality are more likely to offer tangible rewards as a strategy to promote fundraising. Campaign duration and campaign target are also

positively and significantly associated with the probability of adopting tangible rewards. Based on this logit regression, all campaigns' propensity scores are calculated. As a result of the balance check, the propensity scores and the covariates are balanced in both treatment groups and comparison groups.

Table 5.3 Logit Regression Results

	Tangible_reward_dummy (logistic regression)	
Ln_duration	2.25***	(0.23)
Ln_target	1.14***	(0.08)
Ln_wordcount	-0.63***	(0.17)
Video	-2.08***	(0.35)
Pic_num	-0.10**	(0.03)
Region_1	0.03	(0.56)
Region_2	0.07	(0.27)
Region_3	-0.14	(0.37)
Category_1	-0.12	(0.36)
Category_2	-0.01	(0.34)
Category_3	-0.01	(0.33)
Category_4	0.02	(0.38)
Category_5	-0.4	(0.43)
Constant	-16.15***	(1.57)
N	2167	
pr2	0.38	
Month FE	Yes	

* p < 0.05, ** p < 0.01, *** p < 0.001.

Note: Robust standard errors in parentheses.

In terms of the matching algorithm, the nearest neighbor algorithm without replacement is used in this paper. It is one of the most straightforward and common matching algorithms (Caliendo and Kopeinig, 2008). By applying one-to-one exact matching, each campaign in the treatment group is matched to exactly one campaign in the comparison group with the closest propensity score. In addition, the tolerance level on the maximum propensity score distance between two campaigns (caliper) is set as 0.05 for precise matching. As a result, 404 matched campaigns are collected as the final sample. Half of the sample comes from the treatment group and half comes from the comparison

group. The descriptive statistics and the correlation matrix of the matched sample are reported in Table 5.4 and Table 5.5.

Table 5.4 Descriptive Statistics (Matched sample)

Variable	Obs	Mean	S. D.	Min	Max
Tangible_reward_dummy	404	0.5	0.5	0	1
Tangible_reward_num	404	3.72	4.2	0	13
Ln_target	404	10.86	1.18	6.91	13.82
Ln_duration	404	3.89	0.42	2.3	4.5
Video	404	0.08	0.27	0	1
Pic_num	404	3.5	3.25	1	25
Intangible_reward_num	404	0.84	0.91	1	3
Ln_wordcount	404	7.61	0.6	6.41	9.15
Status	404	0.39	0.49	0	1
Ln_backer_num	404	3.99	1.06	1.39	9
Ln_total_pledge	404	8.88	2.33	2.83	13.91
Completion_ratio	404	0.66	1.28	0	20.17
Region_1	404	0.05	0.21	0	1
Region_2	404	0.72	0.45	0	1
Region_3	404	0.09	0.28	0	1
Region_4	404	0.15	0.36	0	1
Category_1	404	0.17	0.38	0	1
Category_2	404	0.18	0.39	0	1
Category_3	404	0.32	0.47	0	1
Category_4	404	0.12	0.33	0	1
Category_5	404	0.08	0.28	0	1
Category_6	404	0.12	0.33	0	1

Table 5.5 Correlation Matrix

	1	2	3	4	5	6	7	8
1.Tangible_reward_dummy	1							
2.Tangible_reward_num	0.93*	1						
3.Status	-0.19*	-0.25*	1					
4.Ln_backer_num	0.03	-0.04	0.36*	1				
5.Ln_total_pledge	-0.02	-0.15*	0.61*	0.59*	1			
6.Completion_ratio	-0.12*	-0.11*	0.42*	0.32*	0.39*	1		
7.Ln_target	0.34*	0.30*	-0.26*	0.24*	0.34*	-0.22*	1	
8.Ln_duration	0.24*	0.22*	-0.07*	0.07*	0.02	-0.03	0.14*	1
9.Video	-0.15*	-0.13*	0	0.06*	0.08*	0.01	0.07*	-0.03
10.Pic_num	-0.14*	-0.12*	0.02	-0.06*	-0.01	0.09*	-0.08*	0.01
11.Intangible_reward_num	-0.14*	-0.12*	0.02	-0.05*	-0.01	0.07*	-0.07*	0.01
12.Ln_wordcount	0.01	-0.04*	0.15*	0.14*	0.28*	0.07*	0.16*	0.10*
13.Region_1	0.03	0.04	-0.06*	-0.04	-0.05*	-0.03	0.02	0.04
14.Region_2	-0.01	-0.02	0.10*	0.12*	0.11*	0.05*	0.02	-0.07*
15.Region_3	-0.02	-0.02	-0.04	-0.07*	-0.06*	-0.01	-0.04*	0.03
16.Category_1	-0.01	-0.03	0.07*	0.03	0.08*	0.05*	-0.02	0
17.Category_2	-0.03	-0.05*	0.04	-0.03	0.04*	0.03	-0.02	-0.12*
18.Category_3	0.05*	0.07*	-0.12*	-0.05*	-0.12*	-0.07*	0.06*	0.02
19.Category_4	0.02	0.03	-0.02	0.02	0	-0.03	0.02	0.04
20.Category_5	-0.04	-0.03	0.02	0.03	0	0.01	-0.04	0.04

Note: *p<0.01

Table 5.5 Correlation Matrix

	9	10	11	12	13	14	15	16	17	18	19
9.Video	1										
10.Pic_num	0.10*	1									
11.Intangible_reward_num	0.08*	0.84*	1								
12.Ln_wordcount	0.06*	0.04*	0.08*	1							
13.Region_1	-0.01	0	0.01	0.02	1						
14.Region_2	0	-0.03	-0.06*	0.02	-0.28*	1					
15.Region_3	-0.01	-0.01	0.03	0.01	-0.06*	-0.59*	1				
16.Category_1	0	-0.02	-0.01	0.14*	-0.05*	0.05*	0	1			
17.Category_2	0.02	0.01	0	0.05*	0.05*	-0.03	0	-0.26*	1		
18.Category_3	-0.06*	0.01	0.02	-0.20*	-0.01	-0.06*	0.01	-0.27*	-0.33*	1	
19.Category_4	0.03	0	0	-0.01	0.05*	-0.05*	0	-0.16*	-0.19*	-0.20*	1
20.Category_5	0.05*	0.02	0.02	0.01	-0.02	0.05*	-0.01	-0.17*	-0.21*	-0.22*	-0.13*

Note: *p<0.01

Table 5.6 Results of Balancing Assumption

Variable	Unmatched	Mean		Bias (%)	Reduced Bias (%)	t-test	
	Matched	Treated	Control			t-value	p-value
Ln_duration	U	3.9	3.49	90.4	93.1	11.31	0
	M	3.89	3.91	-6.2		-0.65	0.519
Ln_target	U	10.99	9.37	129.8	98.1	16.98	0
	M	10.88	10.85	2.5		0.27	0.79
Ln_wordcount	U	6.94	6.55	18.1	73.4	3.58	0
	M	6.94	7.05	-4.8		-0.66	0.51
Video	U	0.07	0.3	-60.2	86.1	-6.86	0
	M	0.08	0.11	-8.4		-1.05	0.3
Pic_num	U	3.56	6.45	-59.9	87	-6.53	0
	M	3.63	3.26	7.8		1.18	0.24

To evaluate the quality of matching, several tests have been conducted. First, the percentage of standard error biases before and after matching are calculated to determine whether campaigns with treatment and campaigns without treatment have no significant differences in their observable features after matching. The results are presented in Table 5.6. The results indicate that before matching, the standard error bias ranges from 18.1% to 129.8%. However, after matching, it ranges from 2.5% to 8.4%, a sharp decrease in standard error. In addition, a *t*-test is also conducted on the mean value of each campaign's observable features before and after matching. According to Table 5.6, there are no significant differences in each observable feature's mean value between campaigns in the treatment group and campaigns in the comparison group after matching, indicating that campaign differences are no longer significant.

Regarding the model's goodness of fit, a logit regression is conducted two times using the unmatched data set and the matched data set. The dependent variable in this regression is whether a campaign offers tangible rewards, and the independent variables are campaigns' inborn features. The results of the regressions, depicted in Table 5.7, indicate that the Pseudo R^2 of the unmatched model is 0.384, which presents a good goodness of fit of the model. Based on the results of the likelihood ratio (LR) test, the unmatched model is significant as a whole and a campaign's

inborn features can be used to determine which campaign is more likely to offer tangible rewards. Conversely, the Pseudo R^2 decreased to 0.016, and the results of the LR test were no longer significant in the matched model. Therefore, it is no longer possible to identify which campaign is more likely to offer tangible rewards based on its inborn features. To sum up, in terms of inborn features, the campaigns in the treatment group and the ones in the comparison group are very similar after matching. Thus, the endogeneity problem caused by self-selection has been resolved by the PSM method. Next, the hypotheses are tested based on this matched sample.

Table 5.7 The Variance of Control Group and Treatment Group Before and After Matching

Sample	Pseudo- R^2	Likelihood Ratio Test		Bias	
		chi2-value	p-value	Means	Median
Unmatched	0.38	515.37	0	33.5	13
Matched	0.02	8.59	0.86	5.7	5.7

5.5 Results

To rule out multicollinearity, the variance inflation factors (VIFs) of all variables are calculated. The mean VIF value is 2.08, and all other single VIF values range from 1.05 to 3.79, below the threshold of 5 (Neter et al., 1996). Therefore, the models have no multicollinearity problem. To test the hypotheses, a binary logistic regression is conducted to test whether offering tangible rewards is negatively associated with the final status of a prosocial crowdfunding campaign (H_1). As the results show in Model 1 from Table 5.8, the presence of tangible rewards has a significant negative effect on the success of a prosocial crowdfunding campaign (significant at 1% level). Next, a series of OLS regressions are estimated to test whether this negative effect is still valid in terms of a prosocial campaign's performance (H_2). The results are presented separately in Models 2, 3 and 4 of Table 5.8. Specifically, campaigns with tangible rewards tend to have a 24% lower total backer number (significant at 5% level) and a 70% lower total pledge amount (significant at 1% level) than campaigns

without rewards. In addition, offering tangible rewards causes a 0.37 deduction in the completion ratio of a campaign (significant at 1% level). These results support hypothesis H₂. Next, the influences of the number of tangible rewards on campaign performance are tested (H₃). The results are reported in Table 5.9. In line with previous predictions, the number of tangible rewards in a campaign is negatively associated with the campaign's performance. With all else being equal, one standard deviation increase in a prosocial campaign's tangible reward number will cause a 7% decrease in its total backer number, a 22% decrease in its total pledge amount and a 0.07 deduction in its completion ratio. The results are all statistically significant at the 0.1% level.

Table 5.8 The Effect of Tangible Rewards on Prosocial Campaign Outcomes

	Model 1		Model 2		Model 3		Model 4	
	Status		Ln_backer_num		Ln_total_pledge		Completion_ratio	
Tangible_reward_dummy	-0.74**	(0.23)	-0.24*	(0.10)	-0.70**	(0.21)	-0.37**	(0.12)
Ln_duration	-0.57	(0.30)	-0.34*	(0.14)	-0.86**	(0.29)	-0.59	(0.38)
Ln_target	-0.40***	(0.11)	0.07	(0.04)	0.23*	(0.11)	-0.21**	(0.06)
Ln_wordcount	1.19***	(0.24)	0.44***	(0.10)	1.36***	(0.19)	0.47***	(0.12)
Video	-0.95	(0.49)	-0.24	(0.22)	-0.27	(0.42)	-0.25	(0.13)
Pic_num	-0.14*	(0.05)	-0.05*	(0.02)	-0.08	(0.05)	-0.05	(0.03)
Intangible_reward_num	0.30	(0.21)	0.07	(0.09)	0.07	(0.19)	0.25	(0.16)
Region_1	-0.72	(0.76)	-0.31	(0.30)	-0.27	(0.62)	-0.15	(0.18)
Region_2	0.38	(0.33)	0.28*	(0.13)	0.37	(0.30)	0.24*	(0.10)
Region_3	0.18	(0.48)	0.06	(0.21)	0.15	(0.42)	0.27	(0.20)
Category_1	-0.04	(0.43)	-0.08	(0.21)	0.35	(0.38)	-0.08	(0.17)
Category_2	-0.03	(0.42)	-0.01	(0.20)	0.20	(0.41)	-0.05	(0.17)
Category_3	-0.16	(0.41)	-0.01	(0.20)	0.02	(0.39)	0.06	(0.19)
Category_4	-0.61	(0.45)	-0.12	(0.23)	-0.09	(0.43)	-0.05	(0.21)
Category_5	0.06	(0.50)	-0.09	(0.25)	0.32	(0.45)	-0.09	(0.18)
Constant	-2.84	(2.00)	1.31	(0.91)	-0.46	(1.87)	1.41	(1.36)
N	404		404		404		404	
Pr2/r2	0.14		0.13		0.21		0.11	
Month FE	Yes		Yes		Yes		Yes	

Note: Robust standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001.

To test the robustness of the results, four additional OLS regressions are conducted to determine whether the negative effects of tangible rewards remain significant when using alternative variables to measure campaign outcomes. Entrepreneurs use crowdfunding not only for fundraising but also for expanding the awareness of their work. This expanded awareness helps them to extend resources beyond close social networks and offers opportunities to market their campaigns to the general public (Gerber and Hui, 2013). Therefore, a campaign still has satisfactory outcomes if it expands its public awareness. On Zhongchou.com, backers can choose to be fans of crowdfunding campaigns by clicking the “like” button or can share campaigns via their social media by clicking the “share” button. Thus, the number of fans and the number of shares (both are natural log-transformed) are introduced as two new dependent variables for robustness checks. The results are reported in Table 5.10. According to Models 8 and 9, the presence of tangible rewards has negative effects on a campaign’s total fans number and sharing number (both significant at the 1% level). The number of tangible rewards is also negatively associated with a campaign’s total fans number and a campaign’s sharing number (both significant at the 0.1% level). In summary, the results hold robustness and consistency across two different measures of campaign outcomes.

Table 5.9 The Effects of Tangible Reward Number on Prosocial Campaign Performance

	Model 5		Model 6		Model 7	
	Ln backer num		Ln total pledge		Completion ratio	
Tangible_reward_num	-0.07***	(0.01)	-0.22***	(0.03)	-0.07***	(0.01)
Ln_duration	-0.32*	(0.13)	-0.79**	(0.26)	-0.58	(0.38)
Ln_target	0.06	(0.04)	0.23*	(0.1)	-0.22**	(0.07)
Ln_wordcount	0.39***	(0.09)	1.21***	(0.19)	0.42***	(0.11)
Video	-0.24	(0.2)	-0.28	(0.39)	-0.25*	(0.12)
Pic_num	-0.05*	(0.02)	-0.07	(0.04)	-0.05	(0.03)
Intangible_reward_num	0.07	(0.09)	0.09	(0.18)	0.25	(0.16)
Region_1	-0.3	(0.29)	-0.22	(0.57)	-0.14	(0.18)
Region_2	0.27*	(0.13)	0.35	(0.29)	0.23*	(0.1)
Region_3	0.08	(0.2)	0.23	(0.38)	0.28	(0.2)
Category_1	-0.1	(0.2)	0.3	(0.32)	-0.1	(0.16)
Category_2	-0.03	(0.2)	0.16	(0.37)	-0.08	(0.16)
Category_3	0.01	(0.19)	0.08	(0.34)	0.07	(0.19)
Category_4	-0.09	(0.22)	0	(0.38)	-0.02	(0.2)
Category_5	-0.08	(0.25)	0.35	(0.4)	-0.09	(0.17)
Constant	1.72*	(0.86)	0.81	(1.63)	1.92	(1.42)
N	404		404		404	
r2	0.19		0.34		0.14	
Month FE	Yes		Yes		Yes	

Note: Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.10 Robustness Check

	Model 8		Model 9		Model 10		Model 11	
	Ln fans		Ln shares		Ln fans		Ln shares	
Tangible_reward_dummy	-0.16**	(0.12)	-0.22**	(0.14)				
Tangible_reward_num					-0.05***	(0.01)	-0.07***	(0.01)
Ln_duration	-0.06	(0.16)	-0.26	(0.19)	-0.04	(0.16)	-0.24	(0.19)
Ln_target	0.06	(0.06)	-0.04	(0.06)	0.06	(0.06)	-0.04	(0.06)
Ln_wordcount	0.52***	(0.11)	0.31*	(0.13)	0.49***	(0.11)	0.26*	(0.13)
Video	-0.13	(0.23)	-0.03	(0.29)	-0.13	(0.22)	-0.04	(0.28)
Pic_num	0.01	(0.03)	0.01	(0.03)	0.01	(0.03)	0.01	(0.03)
Intangible_reward_num	-0.13	(0.10)	-0.09	(0.11)	-0.13	(0.11)	-0.09	(0.11)
Region_1	-0.03	(0.34)	-0.08	(0.36)	-0.02	(0.33)	-0.06	(0.35)
Region_2	0.40*	(0.19)	0.30	(0.18)	0.40*	(0.19)	0.29	(0.18)
Region_3	0.46	(0.27)	0.26	(0.27)	0.49	(0.26)	0.28	(0.27)
Category_1	0.52*	(0.21)	0.53	(0.28)	0.51*	(0.20)	0.51	(0.27)
Category_2	-0.39	(0.22)	0.63*	(0.26)	-0.40	(0.22)	0.62*	(0.26)
Category_3	-0.27	(0.19)	0.59*	(0.26)	-0.25	(0.19)	0.61*	(0.25)
Category_4	-0.18	(0.21)	0.64*	(0.30)	-0.16	(0.20)	0.67*	(0.29)
Category_5	-0.01	(0.25)	0.48	(0.33)	-0.00	(0.25)	0.49	(0.34)
Constant	-0.12	(1.14)	1.39	(1.22)	0.19	(1.10)	1.79	(1.18)
N	404		404		404		404	
r2	0.19		0.05		0.22		0.09	
Month FE	Yes		Yes		Yes		Yes	

Note: Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5.6 Conclusions

This paper examines the effects of offering tangible rewards on the outcomes of prosocial crowdfunding campaigns. Theoretically, this paper aims to shed light on whether extrinsic motivations will crowd out intrinsic motivations in prosocial crowdfunding contexts. To answer this question, a dataset collected from the largest reward-based crowdfunding platform in China is analyzed using the PSM method. According to the empirical results, the presence of tangible rewards is negatively associated with prosocial crowdfunding campaigns' outcomes. In particular, these rewards lead to a lower probability of meeting the funding target, fewer contributors, lower pledge amounts and a lower completion ratio than campaigns without rewards. These negative effects are strengthened if more tangible reward options are offered.

5.6.1 Theoretical Implications

This paper contributes to the emerging literature on prosocial crowdfunding in general. Prior literature suggests that rewards play important roles in the outcomes of reward-based crowdfunding campaigns (Burtch et al., 2011; Cholakova and Clarysse, 2015; Frydrych et al., 2014). However, few studies focus on the role of rewards in the prosocial crowdfunding context. In particular, this paper contributes to the literature by analyzing the way in which tangible rewards affect the outcomes of prosocial crowdfunding campaigns. The findings of this paper indicate that the presence of tangible rewards is negatively associated with the outcomes of prosocial crowdfunding campaigns. Specifically, the presence of tangible rewards decreases a prosocial crowdfunding campaign's total backer number, total pledge amount and completion ratio.

This paper also contributes to the literature stream on financing social entrepreneurship (SE). Previous literature has reported that donation-based crowdfunding is an ideal channel for funding prosocial campaigns because of its social feature (Lehner, 2013) and "*per se* democratic" process (Drury and Stott, 2011). However, it is still unclear why donation-based crowdfunding is a better approach to prosocial crowdfunding than reward-based crowdfunding. Based on cognitive evaluation theory (Deci and Ryan, 1985), this paper explains why reward-based crowding is not a

suitable pattern for prosocial crowdfunding theoretically. In addition, the empirical findings of this paper demonstrate that reward-based crowdfunding may not be a proper method for funding prosocial campaigns. Compared to donation-based crowdfunding, prosocial campaigns that adopt reward-based patterns tend to have a lower propensity to successfully obtain funding. They also attract fewer backers and have lower total pledge amounts and lower completion ratios.

In addition to contributing to the literature on prosocial crowdfunding and social entrepreneurship, this paper also adds several contributions to cognitive evaluation theory (Deci and Ryan, 1985). Extrinsic motivations' "crowding-out" effects on donors' intrinsic motivations have been confirmed in the prosocial crowdfunding context. The findings enrich the literature stream regarding the "crowding-out" effects of extrinsic motivations in prosocial activities (e.g., Lepper and Greene, 2015; Deci and Ryan, 1985; Frey, 1993; Benabou and Tirole 2003; Gneezy et al., 2011). Prior literature has examined the "crowding-out" effect in prosocial contexts by using money as the proxy of extrinsic motivations (Titmuss, 1970). This paper discusses whether the "crowding-out" effect is still valid if other types of extrinsic incentives are applied (Ariely, Bracha and Meier, 2009). The findings show that the "crowding-out" effect is not altered when non-monetary incentives are adopted.

5.6.2 Practical Implications

This paper also offers several practical implications for both prosocial campaign initiators and crowdfunding platform administrators.

First, this study empirically demonstrates that offering tangible rewards is not an effective strategy to facilitate prosocial campaign fundraising via crowdfunding. Therefore, compared to reward-based crowdfunding platforms, donation-based ones are more suitable channels for prosocial campaign initiators to raise funding.

Second, it is crucial for the administrators of crowdfunding platforms to clearly understand the positioning of their platforms. Based on different platform positioning, they should also be aware of contributors' perceived

heterogeneous interests and motivations. Therefore, crowdfunding campaigns' promotion strategies should be customized instead of generalized according to different types of contributors. If not, platform administrators tend to have unintended results by adopting inappropriate campaign promotion strategies. For example, compared to a pure donation-based crowdfunding platform, contributors on a hybrid platform (both commercial and prosocial campaigns) may not all be intrinsically motivated. Instead, they should be motivated to contribute extrinsically, intrinsically or both according to different types of campaigns. For commercial campaigns, offering extrinsic rewards may be positively associated with campaign outcomes. However, it will not be accepted as an effective strategy to promote prosocial campaigns because this strategy crowds out the intrinsically motivated prosocial donors.

5.6.3 Limitations and Future Research

Apart from the theoretical and practical insights, this paper also has limitations that offer directions for future research.

First, although the self-selection bias of tangible reward adoption is alleviated by balancing campaign characteristics through the propensity score matching method, entrepreneur-related features may also cause self-selection bias. For example, experienced entrepreneurs tend to have a lower propensity than novice entrepreneurs to adopt tangible rewards as external incentives in their prosocial campaigns. Because of their past experience, they may have better knowledge than novices do about designing attractive campaigns. If this is the case, entrepreneurs' past crowdfunding experience should be an important variable associated with tangible reward adoption and should be controlled to obtain unbiased results. However, entrepreneur-related information is not accessible on this platform. Future research may generate better results by controlling the past crowdfunding experience of entrepreneurs.

Second, individuals care about their social image when conducting prosocial activities. They want to be recognized for altruism rather than egoism in public (Benabou and Tirole, 2006). Therefore, in addition to intrinsic and extrinsic motivations, social image concerns may also be

treated as sufficient motivations that drive individuals to perform prosocial activities (Haley and Fessler, 2005). In this paper, social image concern is not taken into consideration for various reasons. It is impossible to find a suitable proxy to measure individuals' social image concern in the observational data context. In addition, contributions on crowdfunding platforms are always given anonymously (Burtch et al., 2013), which may dramatically reduce contributors' concern for social image. This anonymity may also partly explain the negative effects of the "personal recognition souvenirs" on campaign outcomes. However, it does not mean that social image concern is not important in the prosocial crowdfunding context. Future studies could extend and enrich this paper by finding ways to measure individuals' social image concern and testing the effects of donors' social image concern on their desire to donate in prosocial campaigns.

Based on the collected data, the form of tangible rewards is limited to personal recognition souvenirs (e.g., t-shirts with a prosocial campaign logo). Therefore, the findings may not be generalized to other types of tangible rewards such as rewards with practical use. To generalize the findings, future studies could further explore the effect of extrinsic motivations in the prosocial crowdfunding context by testing different types of rewards.

Finally, the findings are generated by analyzing the data from a Chinese crowdfunding platform. Therefore, the question of whether the results of this study can be applied universally remains uncertain. Although this study meaningfully describes what happens, a more comprehensive study is needed to increase the generalizability of the findings. Future studies could enrich this paper by reexamining the findings in other crowdfunding platforms that are established in different cultural and social backgrounds (e.g., Indiegogo). It would also be interesting to conduct comparative studies between crowdfunding platforms with different cultural backgrounds to determine whether cultural factors mediate the effects of extrinsic motivations in prosocial contexts.

Chapter 6. Discussion

Entrepreneurial financing affects the survival and growth of new ventures (King and Levine, 1993; Shane and Venkataraman, 2000). Which financing channels new ventures should use and why some new ventures are more successful than others in accessing financial resources are two major questions in entrepreneurship research (Cassar, 2004). Because of the “liability of newness” (Stinchcombe, 1965), traditional financing channels may be hesitant to finance new ventures. Thus, new channels must be developed for new venture financing. Crowdfunding has recently emerged as an innovative and feasible channel for start-up financing in addition to traditional fundraising sources. Although research on crowdfunding has been popular in past decades, researchers’ understanding of the crucial success factors of crowdfunding remains limited (Hemer, 2011). Therefore, taking reward-based crowdfunding as the research context, this thesis comprehensively explores the possible success determinants of crowdfunding. The theoretical implications, practical implications and future research avenues are discussed in detail in the following sections.

6.1 Theoretical Implications

In general, this thesis contributes to “Theoretical Universalism” as the results of this thesis have demonstrated that Western-based theories can be borrowed and applied to explain Chinese crowdfunding phenomenon. This “cross-context theory borrowing” (Whetten, 2009) not only stimulates novel insights into understanding Chinese crowdfunding phenomenon but also enriches the borrowed Western theories (Whetten, 2009; Tsui et al., 2004). Based on Western-oriented theories, the results of this thesis provide novel insights for understanding crowdfunding phenomena in the Chinese context. In addition, these novel insights also pave ways to broaden, deepen and generalize the existing theories (Whetten, 2009).

Specifically, this thesis examines three different aspects to understand crowdfunding success. The influences of supporters’ utilitarian value (Chapter 2 and 3), hedonic value (Chapter 4) and motivations (Chapter 5)

on crowdfunding success are investigated in four chapters. The theoretical implications of this thesis are discussed separately as follows.

First, this thesis extends the application of the consumer perspective (Priem, 2007) in the reward-based crowdfunding context. Based on cue utilization theory (Olson, 1978), Chapters 2 and 3 of this thesis establish theoretical links between entrepreneur-based extrinsic cues and crowdfunding campaign success. The findings of these two chapters show that crowdfunding success can be strategically managed through entrepreneurs' empathetic actions and impression management during the crowdfunding campaign. In addition to intrinsic campaign-related cues, crowdfunding supporters may also refer to other extrinsic cues when evaluating campaign quality. For example, entrepreneur-based cues may influence the evaluation of crowdfunding campaigns. In the crowdfunding context, entrepreneurs are closely associated with their campaigns. They not only create the campaigns but also know everything about the campaigns. Therefore, the evaluation of campaigns tends to be influenced by the evaluation of the entrepreneurs (Mitteness et al., 2012). Specifically, in marketing literature, salespersons' empathetic actions as extrinsic cues influence consumers' purchasing intentions significantly (Chen et al., 2011). However, in the crowdfunding context, the influences of entrepreneurs' empathetic actions on crowdfunding success is still unclear. Focusing on entrepreneur empathy and the psychological mechanisms behind it, the findings of Chapter 2 indicate that entrepreneurs' empathetic actions (e.g., question-answering behavior) during crowdfunding campaigns could potentially enhance contributors' utilitarian value and trigger crowdfunding success. To facilitate campaign fundraising, entrepreneurs should exhibit their empathy towards campaign supporters by conducting specific actions (Aggarwal et al., 2005). Specifically, for potential supporters, entrepreneurs' empathetic actions will generate positive affective reactions and trust towards entrepreneurs (Stock and Hoyer, 2005), which will increase the trustworthy level of the entrepreneurs' campaign. As a result, entrepreneurs' empathetic actions will stimulate contributions and eventually influence crowdfunding success through the "biased decision-making" process (Isen and Baron,

1991). The findings of Chapter 2 contribute to the literature on empathetic marketing (Aggarwal et al., 2005) and its application in the crowdfunding context. In addition, previous studies have emphasized the importance of entrepreneurs' impression management (IM) in facilitating the acquisition of entrepreneurial financial resources (Rao, 1994; Aldrich and Fiol, 1994; Gardner and Avolio, 1998; Lounsbury and Glynn, 2001). Recently, crowdfunding has become popular as an innovative channel for entrepreneurial financing among needy entrepreneurs. This new financing channel is completely different from other traditional financing modes (e.g., Mollick, 2014). Therefore, further investigation is required to understand the role of entrepreneurs' IM in the crowdfunding context. However, little attention has been given to the function and legitimacy of entrepreneurs' IM in the crowdfunding context. In Chapter 3 of this thesis, the effects of entrepreneurs' IM on campaign success in the reward-based crowdfunding context are investigated. Examining entrepreneurs' self-funding behavior as an IM tactic, the findings show that entrepreneurs' IM is still effective in facilitating entrepreneurial financing in the crowdfunding context. These findings have enriched the application of IM theory (Goffman, 2002) in the crowdfunding context. In addition, the findings of Chapter 3 contribute to the cue utilization theory (Olson, 1978), similarly to Chapter 2. Entrepreneurs' IM tactics (e.g., self-funding) as entrepreneur-based extrinsic cues are significantly associated with crowdfunding success.

Furthermore, previous studies have emphasized the importance of satisfying contributors' utilitarian value in triggering crowdfunding success (e.g., Mollick, 2014; Agrawal et al., 2011). Based on consumer value theory (Babin et al., 1994), consumer purchasing behavior is not only task-related but also enjoyment-related (Tauber, 1972). Specifically, crowdfunders contribute not only for the utilitarian value of the products but also for the enjoyment achieved during the crowdfunding process. Therefore, in addition to satisfying contributors' utilitarian value, crowdfunding may also trigger hedonic value satisfaction. However, little attention has been given to understanding reward-based crowdfunding success from a hedonic value perspective. Chapter 4 of this thesis

contributes to this literature by taking contributors' hedonic value satisfaction as a novel perspective to investigate reward-based crowdfunding success. Lotteries can create entertaining and participative situations that enhance consumers' hedonic value satisfaction level (Lee, 2002). By using lotteries as a hedonic treatment, this study finds in Chapter 4 that a campaign's lottery feature can increase individuals' willingness to contribute. Campaign supporters' hedonic value will be enhanced by generating fantasies and positive emotional arousal when they contribute to campaigns with lottery features (Babin et al., 1994). Therefore, a campaign's hedonic-enhancing feature (i.e., lottery) is presented to be positively associated with reward-based crowdfunding success.

Finally, this thesis also contributes to the literature stream on financing social entrepreneurship (Lehner, 2013). Specifically, this thesis deviates from previous studies' emphasis on investigating this question in the donation-based crowdfunding context (Choy and Schlagwein, 2015; Lehner, 2013; Drury and Stott, 2011). Alternatively, Chapter 5 explores whether a reward-based crowdfunding model can be used to support social entrepreneurship. Based on cognitive evaluation theory (Deci and Ryan, 1985), this thesis provides a detailed theoretical explanation regarding why reward-based crowdfunding may not be a suitable model for financing social entrepreneurship. This thesis introduces the "crowding-out" model of extrinsic motivation in the prosocial context (Greene and Lepper, 1974; Deci et al., 1999; Gneezy and Rustichini, 2000), which explains how the introduction of extrinsic motivation may decrease an individual's intrinsic motivation to participate in prosocial activities. In terms of crowdfunding, this thesis illustrates that extrinsic motivation, such as providing tangible rewards, decreases individuals' intentions to participate in supporting prosocial campaigns. Specifically, providing tangible rewards decreases a prosocial campaign's total backer number, total pledge amount and completion ratio. The findings enrich the literature stream on the "crowding-out" effects of extrinsic motivations (Lepper and Greene, 2015) in the crowdfunding context. This thesis finds that providing tangible rewards is negatively associated with prosocial

campaign financing in the context of crowdfunding. In other words, reward-based crowdfunding may not be a suitable model for financing prosocial campaigns when compared to donation-based crowdfunding. The “over-justification” effect (Lepper, Greene and Nisbett, 1973) and the “need for autonomy” effect (Deci and Ryan, 1985) can be used to explain the mechanism behind this concept.

6.2 Practical Implications

This thesis offers several practical implications for both entrepreneurs and crowdfunding platform administrators.

First, Chapters 2 and 3 indicate that campaign-related information and entrepreneur behavior during the crowdfunding process jointly influence crowdfunding success. Therefore, in addition to offering high-quality campaign in the ex-ante phase of crowdfunding, entrepreneurs should also be active players during the crowdfunding period by conducting empathetic interactions with potential contributors and performing impression management. Furthermore, considering the positive influences of “entrepreneur-contributor” interaction and entrepreneur impression management on crowdfunding success, crowdfunding platforms should help entrepreneurs to conduct these activities more effectively. Specifically, crowdfunding platforms can facilitate “entrepreneur-contributor” interaction by offering effective online communication tools such as real-time communication and multi-media communication tools. In addition, crowdfunding platforms should also provide training sessions to develop entrepreneurs’ impression management skills.

Second, given the positive influences of contributors’ hedonic value enhancement on crowdfunding success, Chapter 4 shows that crowdfunding success can be achieved by enhancing contributors’ hedonic value satisfaction. Therefore, in addition to offering high-quality campaigns, entrepreneurs should aim to enhance contributors’ hedonic value satisfaction by applying features that add pleasure, feeling, aesthetics, emotion, and enjoyment to their campaigns (Tauber, 1972). Specifically, potential contributors’ hedonic value will be satisfied if they are entertained by contributing to crowdfunding campaigns. For example,

the lottery, an entertaining feature of crowdfunding campaigns, can be used by entrepreneurs to enhance contributors' hedonic value satisfaction and improve crowdfunding performance. In addition, crowdfunding platform administrators should also benefit from adding entertaining features into their platforms for promotional purposes. The hedonic-oriented promotion strategy should be an effective way to boost platform popularity.

Finally, Chapter 5 empirically demonstrates that offering tangible rewards is negatively associated with prosocial crowdfunding campaign success. Therefore, for financing prosocial purposes through crowdfunding, entrepreneurs should choose a donation-based model rather than a reward-based model. For crowdfunding platform administrators, campaign promotion strategies should be customized rather than generalized, because unintended results may occur by applying inappropriate promotion strategies to campaigns. For example, offering tangible rewards may be an effective promotion strategy for commercial campaigns; however, this strategy is not effective for promoting prosocial campaigns, because tangible rewards may crowd out contributors' intrinsic motivations for supporting prosocial purposes. Thus, offering intangible rewards that enhance contributors' social image (e.g., public "letters of thanks") should be an effective strategy for promoting prosocial campaigns.

6.3 Limitations and Future Research

The limitations of each chapter have been discussed separately in detail. This section highlights the overarching limitations of the entire thesis and opens new research avenues for future studies.

First, the main findings of this thesis are generated by following "Theoretical Universalism" (Alon et al., 2011; Barney and Zhang, 2009; Whetten, 2009). However, based on the perceived differences of Chinese market (Zaidman and Drory, 2001; Maheswaran and Shavitt, 2000; Brumbaugh, 2002), "Theoretical Particularism" may also be applicable to understand crowdfunding phenomenon in China (Whetten, 2002). In opposite to "Theoretical Universalism", "Theoretical Particularism" shifts

the focus from “applying existing theories” to “creating new theories” (Whetten, 2002). It suggests that customized theories need to be created to understand the context-specific phenomenon (Child, 2000; Barney and Zhang, 2009). Because the application of generalized theories may hamper the understanding of the context-specific questions (Tsui et al., 2004). Therefore, if possible, future Chinese crowdfunding studies should make effort to create local theories to investigate Chinese crowdfunding practices.

Moreover, propensity score matching, coarsened exact matching and the Heckman two-stage model are used to solve the perceived self-selection problems in this thesis. Specifically, I use these methods to balance campaigns’ observable attributes to alleviate the self-selection bias. However, in addition to the attributes of campaigns, characteristics of entrepreneurs tend to act as another source of the self-selection problem that may also influence crowdfunding results (Mocan and Tekin, 2002). For example, through the “learning by doing” (Hsu, 2007) process, entrepreneurs with crowdfunding experience tend to have more knowledge than inexperienced entrepreneurs about how to design successful campaigns. Compared to the campaigns created by novice entrepreneurs, campaigns launched by experienced entrepreneurs tend to have higher probabilities of success. Therefore, in addition to the attributes of campaigns, entrepreneurs’ past crowdfunding experience should also be balanced to obtain unbiased results. However, due to the availability of data, I do not take entrepreneurs’ past crowdfunding experience into consideration in this thesis. To alleviate the perceived self-selection bias, future research will benefit by controlling both the attributes of campaigns and the characteristics of entrepreneurs.

Furthermore, in this thesis, I examine the influences of extrinsic cues on reward-based crowdfunding success, focusing on entrepreneur-based cues (i.e., entrepreneurs’ empathy and impression management). However, in addition to entrepreneur-based cues, extrinsic cues from the third party may also influence crowdfunding success. Specifically, prior marketing literature has found that online product reviews as third-party endorsements are significantly associated with consumers’ purchasing

intentions. For example, in an information asymmetry setting, online consumers tend to consider a product to be of high quality if the reviews of the product are positive overall (e.g., Chen and Xie, 2005). Similarly, in the crowdfunding context, comments on the crowdfunding campaigns can be treated as third-party endorsements. These comments may influence potential contributors' contributing intention because the overall attitude of the comments on a campaign reveals the campaign's perceived quality and credibility. By analyzing campaign comments, future research can generate a comprehensive understanding of the influences of extrinsic cues on crowdfunding success.

Finally, the findings of this thesis are generated by conducting quantitative analysis. The empirical results provide solid evidence to test related theories. However, in addition to a quantitative approach, a case study approach may also be applicable in crowdfunding research. Due to the complexity and novelty of crowdfunding, the case study approach provides an alternative way to understand crowdfunding (Eisenhardt, 1989). Specifically, it is suitable for exploring why or how crowdfunding success occurs and for examining the relationships among success factors (Yin, 2017). Therefore, for future research, it would be interesting to apply the case study approach to further investigate the theoretical logics behind crowdfunding success. Based on theoretical replication logic (Yin, 2017), in addition to the common success factors, other novel factors used to create successful campaigns can be discovered by analyzing typical successful crowdfunding campaigns.

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Nederlandse Samenvatting

Door op beloning gebaseerde crowdfunding als onderzoekscontext te gebruiken, verkent dit proefschrift de succesdeterminanten van crowdfundingcampagnes vanuit een marketingperspectief. De bevindingen van dit proefschrift worden gepresenteerd in vier hoofdstukken (hoofdstuk 2, 3, 4 en 5). De relatie tussen de utilitaire motivatietevredenheid van de contributanten en het succes van crowdfunding op basis van beloningen wordt besproken in de hoofdstukken 2 en 3. De bevindingen benadrukken de positieve invloeden van het empathisch gedrag en het impressiemanagement van ondernemers op beloning gebaseerde crowdfundinguitkomsten. Hoofdstuk 4 onderzoekt of hedonische waardebevorderende behandelingen in de vorm van loterijen bijdragen aan het succes van crowdfunding. Tot slot gebruikt hoofdstuk 5 sociaal ondernemerschap als een voorbeeld om te onderzoeken waarom het voldoen aan de extrinsieke motivatie van contributanten niet altijd leidt tot crowdfunding-succes.

Hoofdstuk 2 probeert met name het begrip van op rendement gebaseerd crowdfunding-succes te vergroten door middel van het elaboration likelihood model (ELM). Het suggereert dat, naast de kwaliteitssignalen van campagnes, de perifere signalen ook het succes van crowdfunding beïnvloeden in de vorm van empathisch gedrag van ondernemers tijdens de crowdfundingfase. Hoofdstuk 3 verkent de relatie tussen impressiemanagement van ondernemers (IM) en succes op basis van beloningsgebaseerde crowdfunding. Meer specifiek, hoofdstuk 3 onderzoekt de effecten van IM-tactieken van ondernemers in de vorm van zelffinanciering op succes met betrekking tot beloningsgebaseerde crowdfunding. De bevindingen tonen aan dat zelffinancieringsgedrag van ondernemers als een IM-tactiek niet alleen positief bijdraagt aan het succes van crowdfunding, maar ook het eindresultaat van crowdfunding verbetert. Hoofdstuk 4 biedt inzicht in de manier waarop de hedonische waardeverbetering van contributanten invloed heeft op opbrengsten gebaseerd campagnesucces. De empirische resultaten suggereren dat de hedonische waardebevorderende factor in de vorm van loterijen positief

gerelateerd is aan het succes van crowdfunding. Bovendien verbetert het ook de populariteit van crowdfunding-campagnes. Hoofdstuk 5 onderzoekt de redenen waarom de op beloning gebaseerde benadering mogelijk geen geschikt crowdfundingmodel is voor het financieren van prosociale doeleinden. De bevindingen van dit hoofdstuk suggereren dat de introductie van extrinsieke motivatie de intrinsieke motivatie van een individu om te doneren in prosociale campagnes verdringt.

De bevindingen van dit proefschrift bieden niet alleen zinvolle inzichten in de literatuur over crowdfunding-succes, maar bieden ook praktische tips voor zowel crowdfunding-ondernemers als crowdfundingplatform-beheerders.

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